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July 25, 1991

Mr. Alan Sorsher
Toxic Substances Control Division
California Department of Health Services
1405 North San Fernando Boulevard, Suite 300
Burbank, California 91504

Subject: RCRA Ground Water Sampling
Eleventh Quarterly Sampling Report, April through June 1991
Bermite Division, Whittaker Corporation
Delta Project No. 40-90-038

Dear Mr. Sorsher:

In accordance with the RCRA Closure Plan for Whittaker Corporation, Bermite Division enclosed is a copy of the Eleventh Quarterly Ground Water Sampling Report. This report presents the sampling and analysis results of those parameters analyzed both during this quarter and all prior quarterly sampling events.

This report includes a statistical analysis of the indicator parameters (pH, conductivity, total organic carbon, and total organic halogens) analyzed. The analysis compared the results of the downgradient monitoring wells to the upgradient (background) monitoring wells. For the results presented, the statistical analysis does not show any statistically significant difference between the downgradient and background wells at Area 317 for any of the four indicator parameters.

This report includes a graphical presentation of the tetrachloroethene (TCE) detections over time in monitoring well MW-4. The concentration of TCE in monitoring well MW-4 has continued to drop over the last seven quarters. The concentration detected during this quarter's sampling event was 1.0 part per billion.

If you have any questions regarding this report, please call me at (916) 638-2085.

Sincerely,

DELTA ENVIRONMENTAL CONSULTANTS, INC.

James R. Brownell, for

Michael A. Acton
Project Manager

MAA:ecd
Enclosure

cc/enc: Mr. Edward Muller, Whittaker Corporation
Mr. Glen AbdunNur, Whittaker Corporation, Bermite Division
Ms. Jan Palumbo, U.S. Environmental Protection Agency, Region IX
Mr. Jim Ross, California Regional Water Quality Control Board,
Los Angeles Region

RCRA GROUND WATER SAMPLING
QUARTERLY SAMPLING REPORT
NO. 11

APRIL THROUGH JUNE 1991
WHITTAKER CORPORATION
BERMITE DIVISION
22116 WEST SOLEDAD CANYON ROAD
SANTA CLARITA, CALIFORNIA 91350
DELTA PROJECT NO. 40-90-038

Prepared by:

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July 26, 1991

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RCRA GROUND WATER SAMPLING
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APRIL THROUGH JUNE 1991
WHITTAKER CORPORATION
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1.0 INTRODUCTION

The Bermite facility is located at 22116 West Soledad Canyon Road in Santa Clarita, California (Figure 1). Operations at the Bermite facility were discontinued on April 3, 1987. The Bermite facility had 14 Resource Conservation and Recovery Act (RCRA) units with interim status permits for operation of these units at the time of closure. A closure plan was required to be submitted by the Bermite facility and approved by the California Department of Health Services (DHS) and the U.S. Environmental Protection Agency (EPA) in accordance with RCRA. A closure plan was submitted for approval in August 1986 prior to and in anticipation of the facility shutdown. Prior to approval of the closure plan, initial closure activities began in June 1987. After several revisions and modifications, a final, approved, RCRA closure plan was received from DHS and EPA on December 28, 1987.

As a requirement of the approved RCRA closure plan, Areas 317 and 342 required a ground water monitoring system capable of detecting and assessing the impact of the two units on the uppermost aquifer at the Bermite facility.

A total of six wells have been installed around Areas 317 and 342. Several reports detailing the location and construction of monitoring wells, the sampling and analysis plan for collecting and analyzing ground water samples from the RCRA wells, and quarterly sampling results have been submitted to DHS and EPA. Section 10.0 of this report lists the documents which have been submitted to DHS and EPA since the start of the closure activities.

Quarterly ground water sampling activities were initiated October 3, 1988, for the existing monitoring wells (MW-1, MW-2, MW-3 and MW-4). The ground water monitoring program includes analyses of water samples for volatile organic compounds (VOCs). The third quarter sampling event indicated concentrations of trichloroethene (TCE) in the ground water at monitoring well MW-4. As a result of the TCE detection in the ground water at monitoring well MW-4, two additional monitoring wells were installed (MW-5 and MW-6).

The fourth quarterly monitoring event included sampling of the ground water at the four initial monitoring wells. The new monitoring wells (MW-5 and MW-6) were not equipped for sampling at that time. Chemical analyses from the fourth quarter sampling event indicated results similar to the results observed in the third quarterly sampling event. The concentrations of VOCs in monitoring wells MW-1, MW-2, and MW-3 were below laboratory method detection limits; however, the ground water in monitoring well MW-4 continued to show concentrations of TCE. The results of the fifth through eleventh quarterly sampling events indicated that concentrations of TCE in the ground water at monitoring well MW-4 have decreased from the third and fourth quarter results.

The fifth through eleventh quarterly sampling events were conducted utilizing all six monitoring wells. Based on the results of the previous sampling events, a reduced list of parameters was approved by DHS for future quarterly sampling events. This reduced parameters list was initiated on the fifth quarterly sampling event in October 1989.

Statistical analysis of indicator parameters was also initiated during the fifth quarterly sampling event. The ground water samples collected and analyzed for indicator parameters from each of the monitoring wells (MW-1 through MW-4) over the past year were evaluated statistically to determine whether statistically significant changes to the ground water had occurred as a result of site activities.

DHS conducted a Comprehensive Ground Water Monitoring Evaluation (CME) on January 24 and 25, 1990, during the sixth quarterly monitoring event. Three persons from DHS were present during all phases of the sixth quarterly monitoring event, from initial potentiometric surface elevation measurements to the sealing of the coolers containing the quarterly ground water samples.

The eleventh quarterly sampling event occurred on April 22, 23, and 24, 1991. The results of the eleventh quarterly sampling and analysis event are presented in this report, together with recommendations for future quarterly sampling events.

2.0 SAMPLING PREPARATION

2.1 Depth to Water Measurements

Water level measurements were collected on April 22, 1991, prior to well evacuation and sampling activities. Monitoring well locations with respect to Areas 317 and 342 are shown in Figure 2. Water levels were measured to an accuracy of one hundredth of a foot.

Historically, water levels have been steadily decreasing over the last few years in each of the RCRA monitoring wells. Figure 3 graphically illustrates the historical potentiometric elevations derived from water level measurements collected at the site since December 23, 1987. Table 1 summarizes these historical potentiometric elevations.

Local ground water flow directions have been determined using the potentiometric elevation data. Figure 4 illustrates the potentiometric contours of the ground water and the resultant flow direction for April 22, 1991. Monitoring well MW-4 is located hydraulically downgradient of Area 317 as previously indicated in the February 1988, "Documentation Report--Construction and Development of Wells for Ground Water Monitoring of the 342 and 317 Areas," and the quarterly sampling reports Nos. 1 through 7, prepared by Wenck Associates, Inc., and Nos. 8 through 10, prepared by Delta.

2.2 Well Evacuation

On April 22, 1991, initial depth to water measurements were collected before monitoring well evacuation activities began. Each of the six monitoring well pumps were then started to evacuate potential stagnant water from the well casing. Pumping duration for each monitoring well evacuation is summarized in Table 2.

On April 23, 1991, prior to sample collection, the flow rates for the monitoring wells were reduced. The sampling extraction flow rate was approximately 100 milliliters per minute (ml/min) for each of the monitoring wells.

In accordance with the Ground Water Sampling and Analysis Plan, dated August 1988, evacuated ground water from monitoring wells MW-1, MW-2, MW-3, MW-5, and MW-6 was discharged to the ground surface downgradient from each monitoring well. Ground water purged from monitoring well MW-4 was pumped and treated through granular activated carbon and discharged into a 44,100-gallon Baker tank located adjacent to the well. The treated evacuation water was then discharged to the ground surface in accordance

with the Whittaker Corporation, Bermite Division, National Pollutant Discharge Elimination System (NPDES) Permit No. CA 0061069.

2.3 Well Stabilization

Well stabilization measurements were periodically collected after well evacuation activities were initiated. Stabilization measurements for pH, temperature, and specific conductance were taken three times prior to sampling of each well to ensure that representative ground water samples were collected. Table 3 summarizes the results of the stabilization tests. As shown in Table 3, each monitoring well indicated a relatively stable condition prior to sampling.

3.0 SAMPLING COLLECTION AND ANALYSES

3.1 Required Ground Water Analyses

A reduced parameter testing list was approved by DHS after submittal of Quarterly Sampling Report No. 4. As of the fifth quarter, ground water samples from monitoring wells MW-1, MW-2, and MW-3 were analyzed for the following: sulfates, chlorides, total phosphate, pH, specific conductance, total organic carbon (TOC), total organic halogens (TOX), and dissolved metals by EPA-approved methods. Ground water samples collected from monitoring wells MW-4, MW-5, and MW-6 were analyzed for pH, specific conductance, TOC, TOX, and VOCs by EPA-approved methods.

3.2 Indicator Parameters

As per the approved RCRA closure plan, pH, specific conductance, TOC, and TOX are used as indicator parameters. Four ground water samples were collected from each monitoring well, and each sample was analyzed for pH, specific conductance, TOC, and TOX. EPA-approved methodologies were used in analyzing the indicator parameters. Table 4 summarizes the sample volumes, sample containers, and analytical methods required for each indicator parameter analyzed during the quarterly sampling events. The analyses method protocols are provided in Appendix B of Quarterly Sampling Report No. 1, dated December 1988.

3.3 Ground Water Quality Parameters

As per the approved RCRA closure plan, monitoring is required to determine the quality of the ground water at the Bermite facility relative to primary and secondary drinking water standards as given in 40 CFR 265.92 (b)(1) - (3). Ground water samples collected from monitoring wells MW-1, MW-2, and MW-3 were analyzed for the following drinking water standards: sulfate, chloride, and total phosphate. Table 4

summarizes the sample volumes, sample containers, and analytical methods required for each of the ground water quality parameters analyzed during quarterly sampling events. The analyses method protocols are provided in Appendix B of Quarterly Sampling Report No. 1, dated December 1988.

3.4 Hazardous Constituent Parameters

As per the approved RCRA closure plan, analyses for hazardous constituents, as defined by 40 CFR 261, Appendix VIII, which were possibly used or created at the Bermite facility Areas 317 and 342, are required. A list of metal and organic compounds used at the Bermite facility was provided in the "Ground Water Sampling and Analysis Plan," dated August 1988. Table 4 summarizes the sample volumes, sample containers, and analytical methods required for each of the hazardous constituent parameter groups analyzed during this quarterly sampling event. Ground water samples collected from monitoring wells MW-4, MW-5, and MW-6 were analyzed for VOCs by EPA Method 624 and dissolved metals by EPA Method 6010 using an inductively coupled plasma spectrometer. The VOCs are listed in Table 5, and the metals are listed in Table 6. The analyses method protocols are provided in Appendix B of Quarterly Sampling Report No. 1, dated December 1988.

3.5 Approved Analytical Methods

Indicator, ground water quality, and hazardous constituent parameters were analyzed by EPA or other approved methodologies. Analytical methodologies were presented in the "Ground Water Sampling and Analysis Plan," dated August 1988. Modifications to this plan were approved by DHS prior to the fifth quarterly sampling event. Copies of the analyses method protocols were included in Appendix B of "Quarterly Sampling Report No. 1," dated December 1988.

Ground water samples submitted to FG&L Environmental (FG&L) were analyzed by EPA-approved methods with the exception of total phosphate. Total phosphate has no EPA-specified methodology and therefore was analyzed by approved Standard Method 424F (16th Edition).

3.6 Sample Containers

Sample containers used for the collection of ground water samples were supplied by Eagle Picher Environmental Services of Miami, Oklahoma, and I-Chem, Inc., Hayward, California. The sample containers used were precleaned and sealed at these facilities and are statistically certified as clean and free of volatile organic and metal compounds. Certificates of Analysis for the sample containers used during the quarterly ground water sampling event are provided in Appendix A.

3.7 Sample Labeling

Sample identification labels were filled out in the field at the time of sample collection in accordance with the "Ground Water Sampling and Analysis Plan," dated August 1988. A sample identification system was established to ensure that samples were clearly and properly labeled. Each label identifies the monitoring well number, analytical parameter required, quarterly sampling event number, and replicate number (if required). A legend is provided in Table 7 to explain the labeling system.

3.8 Sample Collection

3.8.1 Sampling Volumetric Flow Rate

Ground water samples were collected after ground water from each monitoring well was sufficiently evacuated to ensure that a representative ground water sample would be collected. A Teflon sampling valve and stem were installed into the invert of the well discharge pipe of each monitoring well to minimize aeration and agitation of the collected ground water sample. The flow rates in the monitoring wells were reduced to approximately 100 ml/min prior to sampling.

3.8.2 Order of Sample Collection

The order in which ground water samples were collected at each monitoring well for analysis is presented in Table 8. The ground water at each monitoring well was sampled for selected analytical parameters in the same order.

3.8.3 Field Sample Preservation

Ground water samples collected for dissolved metals were collected and filtered through an in-line, 0.45 micron filter, manufactured by Instrumentation Northwest, Inc., Redmond, Washington. These filters are specially designed for ground water sampling for dissolved metals and are not reused between samples or monitoring wells. A 50 percent nitric acid solution was added to the sample containers after filtration and collection of the ground water sample to lower the pH. The pH of the water sample was monitored with an electric pH meter as the acid was added using a small pipette. Acid was added until a pH <2 was achieved.

Upon collection, labeling, and sealing of each individual ground water sample, the samples were placed in a refrigerator and locked. On April 24, 1991, the samples were placed on ice in a cooler and delivered to the laboratory.

3.8.4 Field and Trip Sample Blanks

During each quarterly sampling event, field blanks are collected and trip blanks are carried, and analyzed for volatile organics, TOC, and TOX in accordance with the "Ground Water Sampling and Analysis Plan," dated August 1988.

The trip blanks were prepared in the laboratory, transferred to the Bermite facility in coolers, stored in the refrigerator overnight, transferred to each sampling location during sampling activities, and stored with collected ground water samples throughout the sampling event and delivered to the laboratory.

The field blanks are prepared in the field using water provided by the analytical laboratory. These field blanks, once prepared, were stored with the ground water samples throughout the sampling event and delivered to the laboratory.

4.0 FIELD QA/QC

4.1 Decontamination of Field Test Equipment

To minimize cross-contamination between well samples, field equipment used during sampling activities was decontaminated between each well. Decontamination procedures involved cleaning and rinsing with deionized water before and after each sample was collected at each well. The mercury thermometer, pH probe, nitric acid eye droppers, specific conductance probe, and the water level meter probe were all decontaminated between samples.

Clean sampling gloves were worn by sampling personnel prior to sealing the sample containers with the chain-of-custody seals.

4.2 Sample Container Labeling and Seals

As previously stated, the sample containers were labeled in the field as each sample was collected. A unique sample identification number was assigned to each ground water sample. Chain-of-custody seals were then placed on the sample containers after sampling and labeling. The ground water samples were placed on ice in a cooler, and the cooler was sealed with chain-of-custody seals prior to shipment to the laboratory.

4.3 Chain-of-Custody and Sample Analysis Request Forms

Chain-of-custody forms were filled out at the time of sample collection and were kept with the samples until they were delivered to the laboratory. Copies of the signed chain-of-custody forms are provided in Appendix C.

Sample analysis request forms were also filled out at the time of sample collection and were kept with the samples until they were delivered to the laboratory. Sample analysis request forms are used to inform the laboratory which analysis to run on each ground water sample. Copies of the sample analysis request forms are provided in Appendix D.

4.4 Delivery of Samples to Laboratory

Ground water samples were delivered to FG&L in Santa Paula, California, by a Bermite employee after sampling activities were completed. FG&L is approximately a 45-minute drive from the Bermite facility. Maximum and minimum thermometers were placed in each cooler with the samples for verification of the temperature of the samples upon arrival at the laboratory. Upon arrival at the laboratory, the temperature was recorded on the sample analysis request form. The temperature of the samples was kept below $4^{o}C$.

4.5 Security

Security measures are taken to ensure that no person has the opportunity to tamper with the wells or ground water samples, before, during, or after sampling activities. The Bermite facility is fenced-in with locking gates and has 24-hour security personnel overseeing the facility. Each monitoring well has a locking cap to prevent access to the wells. The ground water samples are handled by Bermite personnel only during sampling activities and delivery to FG&L.

5.0 LABORATORY QA/QC

All ground water samples were submitted to FG&L in Santa Paula, California, during the eleventh quarterly ground water sampling event. FG&L is certified by DHS to perform the analyses requested by Bermite.

A detailed description of FG&L's QA/QC program is provided in Appendix E. Copies of the original laboratory analytical reports and chromatographs for all trip, field and method blanks, and duplicate and spiked samples which were performed by FG&L are provided in Appendix F. These blank and spiked samples are part of the QA/QC program FG&L follows. The QA/QC laboratory reports have been reviewed by FG&L.

6.0 SAMPLE ANALYTICAL RESULTS

6.1 Indicator Parameters

Four replicate ground water samples from each monitoring well were analyzed for pH, specific conductance, TOC, and TOX as indicator parameters. Table 9 summarizes the results of the indicator parameters. Copies of the original laboratory data sheets are presented in Appendix G.

The field and laboratory pH measurements conducted during this eleventh quarterly sampling event on the ground water samples collected at each monitoring well were consistent with the values obtained during the previous sampling event.

Specific conductance in the ground water at monitoring well MW-2 is higher than any of the other ground water samples collected from the five monitoring wells. This has been consistent throughout the sampling events as shown in Table 9. Field and laboratory values for specific conductance for each of the monitoring wells are consistent with the values obtained during the previous sampling event.

Concentrations of TOC in the ground water samples collected from monitoring wells MW-1 through MW-6 ranged from 1.2 to 6.0 milligrams per liter (mg/l). Concentrations of TOC had previously been detected in monitoring well MW-2 during the first, second, third, fifth, eighth, ninth, and tenth quarters, monitoring well MW-3 during the ninth and tenth quarters, and monitoring wells MW-1, MW-4, MW-5, and MW-6 during the tenth quarter.

Concentrations of TOX were less than the laboratory detection limit of 5 micrograms per liter (ug/l) in replicate ground water samples collected from monitoring wells MW-1, MW-3, MW-4, MW-5, and MW-6. Concentrations of TOX in the replicate samples collected from monitoring well MW-2 ranged from 74 to 82 ug/l.

6.2 Ground Water Quality Parameters

The ground water from monitoring wells MW-1, MW-2, and MW-3 was sampled and analyzed for dissolved metals. The analytical method used in analyzing dissolved metals utilized an inductively coupled plasma spectrometer which has a detection limit greater than the previously used EPA-approved methodology in quarterly sampling events Nos. 1 through 5. Table 10 summarizes the analytical results for ground water samples collected at these three monitoring wells. Copies of the original analytical reports are provided in Appendix G.

Ground water from monitoring well MW-2 showed concentrations of barium at 600 ug/l. Barium has been found in the ground water at monitoring well MW-2 since the start of the monitoring program. No other metals were detected at or above the detection limit in the ground water at monitoring wells MW-1, MW-2, or MW-3.

6.3 Sulfate, Chloride, and Total Phosphate

Ground water at monitoring wells MW-1, MW-2, and MW-3 was sampled and analyzed for nutrients which include sulfate, chloride, and total phosphate. Nutrient levels in the ground water for each monitoring well sampled are consistent with previous sampling event levels.

Chloride levels in the ground water at monitoring well MW-2 are consistently higher than the concentrations detected in the ground water at monitoring wells MW-1 and MW-3. These values correlate with the relatively high specific conductance levels detected in the ground water at monitoring well MW-2.

Table 11 summarizes the nutrient levels detected in the ground water from each sampling event and also shows the EPA drinking water standards Maximum Contaminant Levels (MCL) for sulfate and chloride. Copies of the original analytical reports are provided in Appendix G.

6.4 Hazardous Constituent Parameters--Volatile Organics

The ground water at monitoring wells MW-4, MW-5, and MW-6 were sampled and analyzed for volatile organics by EPA Method 624. Table 12 summarizes the analytical results for the hazardous constituent parameters tested.

Analytical results did not indicate any identified or tentatively identified VOCs in the ground water at monitoring wells MW-5 and MW-6. Chemical analysis of the ground water at monitoring well MW-4 indicated a concentration of TCE at 1.0 ug/l during this sampling event. Concentrations of TCE in the ground water at monitoring well MW-4 have decreased since the third quarterly sampling event and were reported below the California drinking water standards MCL of 5 ppb (Title 22, California Administrative Code, Section 64444.5) during the eighth, ninth, and tenth quarterly sampling events, and this quarterly sampling event. No other volatile organics were detected in the ground water at monitoring well MW-4.

Concentrations of TCE and TOX in the ground water at monitoring well MW-4 are summarized in Table 13. Figure 5 graphically illustrates the concentrations of TCE and TOX since the start of quarterly monitoring.

Concentrations of TCE in the ground water at monitoring well MW-4 have been declining since initiation of the pump and treat system in July 1989 (Figure 5). Copies of the original analytical reports and chromatograms for the VOC analyses are provided in Appendix G.

7.0 STATISTICAL ANALYSES OF RESULTS TO DATE

As indicated in the "Ground Water Sampling and Analysis Plan," dated August 1988, and as required by 40 CFR Part 265.92, statistical analyses of the indicator parameters have been performed to determine whether there is a statistically significant difference in the water quality between the individual downgradient monitoring wells versus the upgradient or background monitoring wells. Monitoring wells MW-1 and MW-3 are considered upgradient monitoring wells in relation to Area 317, and monitoring wells MW-4, MW-5, and MW-6 are considered downgradient monitoring wells in relation to Area 317.

After four quarters of sampling and analysis of the monitoring system, the mean, standard deviation, variance, and coefficient of variance of the four indicator parameters were calculated. These values were reported to DHS in correspondence to Alan Sorsher from Wenck Associates, Inc., dated October 25, 1989. The statistical analyses, presented in the fifth through tenth quarterly sampling reports, indicated only one statistically significant difference in water quality as determined by the indicator parameters. This was thought to be caused by erroneous total organic carbon results from the sixth quarter. The indicator parameter statistics from background monitoring wells MW-1 and MW-3 have been updated to include the eleventh quarter sampling results. These statistics were then compared to the indicator parameter statistics from the eleventh quarter for each downgradient monitoring well.

The comparison is the calculation of the averaged-replicate t-test which determines that either "no," there is no statistically significant increase (or decrease for pH) in the indicator parameters from each downgradient monitoring well compared to the upgradient monitoring wells, or that "yes," a statistically significant increase (or decrease for pH) has occurred.

A summary of the indicator parameter analyses to date from all six monitoring wells is presented in Table 8. The tenth quarter calculated replicate statistics are included in Table H-1, presented in Appendix H. A summary of the quarterly replicate statistics for each monitoring well and the t-test calculations for TOC, TOX, specific conductance, and hydrogen ion concentration (pH) are shown in Appendix H, Tables H-2, H-3, H-4, and H-5, respectively.

7.1 Assumptions Used in the Statistical Analyses

As recommended on page 122 of the Technical Enforcement Guidance Document (TEGD), the data points that are less than the detection limit have been given a value equal to one-half the detection limit of the analyte.

Calculation of the comparison test statistic (t_c) was determined by following the procedure given in 40 CFR 264, Appendix IV. The test statistic for the hydrogen ion concentration was calculated using a 0.05 level of significance for a two-tailed distribution, and the test statistics for the other parameters were calculated using a 0.05 level of significance for a one-tailed distribution. It was assumed that the data are distributed normally.

7.2 Data Preparation

The ground water analytical results from the two background or upgradient monitoring wells MW-1 and MW-3 for all eleven quarters of sampling and analyses to date and the three downgradient monitoring wells MW-4, MW-5, and MW-6 for the eleventh quarter of ground water sampling have been tabulated and prepared for statistical analysis. Four analytes have been used in the analyses: pH, specific conductance, TOC, and TOX.

In accordance with the averaged replicate student t-test methodology used for this statistical analysis, the four indicator parameter analytical results, which are sampled and analyzed in quadruplicate each quarter (four replicates), are summarized by quarter and by monitoring well. Four summary statistics have been calculated: arithmetic mean, standard deviation, variance, and coefficient of variance. These quarterly replicate statistics have been calculated such that less than detection limit values are considered to have a value of one-half the detection limit and are presented in Table H-1.

The statistical analysis for the indicator parameters involves testing the null hypotheses regarding the ground water quality downgradient of Area 317, i.e., that there is no statistical difference between the average of

the quarterly statistics for each of the four indicator parameters for background monitoring wells MW-1 and MW-3 compared to the eleventh quarter statistics for each of the downgradient monitoring wells MW-4, MW-5, and MW-6.

The calculations of the average quarterly statistics were performed in the same manner as were the quarterly statistics. The t-statistics (t^* and t_c) were calculated as shown in 40 CFR 264, Appendix IV. The values of t_m and t_b were taken from the table included in 40 CFR 264, Appendix IV. An example calculation is included in Appendix H.

Note that the pH values have been transformed into their resulting hydrogen ion concentrations and that the values of t_m and t_b for the analysis of pH come from the two-tailed probability table.

7.3 Results

The averaged eleventh quarter replicate results for each indicator parameter at each downgradient monitoring well were compared to the average first through eleventh quarter replicate results for both background monitoring wells. The statistical analyses indicate that there are no statistically significant differences in hydrogen ion concentration, specific conductance, TOC, or TOX between the downgradient and background ground water quality.

8.0 SUMMARY

8.1 Indicator Parameters

Indicator parameter results for the ground water at monitoring wells MW-1, MW-3, MW-4, MW-5, and MW-6 do not show evidence of ground water contamination. The pH and specific conductance values for the ground water at monitoring wells MW-1, MW-3, MW-4, MW-5, and MW-6 are within the range for clean drinking water. Specific conductance in the ground water at monitoring well MW-2 has been consistently higher throughout the sampling events. Concentrations of TOC in the ground water samples collected from monitoring wells MW-1, MW-2, MW-3, MW-4, MW-5, and MW-6 ranged from 1.2 to 6.0 mg/l. Concentrations of TOX in the ground water were below detection limits for all the monitoring wells with the exception of monitoring well MW-2. The replicate ground water samples collected at monitoring well MW-2 had concentrations of TOX ranging from 74 to 82 ug/l.

8.2 Ground Water Quality Parameters

Metals were not detected above the detection limits in the ground water from monitoring wells MW-1, MW-3, MW-4, MW-5, or MW-6. The ground water at monitoring well MW-2 had a concentration of barium at 600 ug/l; barium concentrations of 600 ug/l have been detected in the ground water at monitoring well MW-2 during each quarterly sampling event.

The ground water at monitoring wells MW-1, MW-2, and MW-3 was analyzed for the nutrients, phosphate, sulfate, and chloride. Nutrient levels in the ground water at monitoring wells MW-1 and MW-3 were within drinking water standards. The nutrient levels in the ground water at monitoring well MW-2 were higher than drinking water standards; however, the nutrient levels were consistent with previous sampling results from this well.

8.3 Hazardous Constituent Parameters

Hazardous constituents were not detected in ground water with the exception of TCE in the sample collected from monitoring well MW-4. The concentration of TCE in monitoring well MW-4 has decreased since its initial detection and initiation of ground water remediation by continuous ground water withdrawal. The concentration of TCE detected in the ground water at monitoring well MW-4 was 1.0 ug/l which is below the State of California Primary MCL for drinking water of 5 ppb, as stated in Title 22, of the California Administrative Code, Section 64444.5.

9.0 RECOMMENDATIONS FOR FUTURE SAMPLING EVENTS

It is recommended that future sampling events continue to be conducted in accordance with the procedures set forth in the "Ground Water Sampling and Analysis Plan," dated August 1988.

These samples will be analyzed for the reduced parameter list and by the testing methods utilized in this sampling event.

10.0 REFERENCES

The following documents have been submitted to DHS and EPA, Region IX, in fulfillment of the RCRA closure plan regarding ground water monitoring at Areas 317 and 342:

- Revised RCRA Closure Plan, April 1987.
- Revised Ground Water Monitoring Plan for the 317/342 Area, October 8, 1987.
- Proposed Interim Status Ground Water Monitoring Sampling and Analysis Program, December 1987.
- Documentation Report--Construction and Development of Wells for Ground Water Monitoring of the 342 and 317 Areas, February 1988.
- RCRA Ground Water Monitoring System--Proposed Final Configuration, May 1988.
- Ground Water Sampling and Analysis Plan, August 1988.
- RCRA Ground Water Sampling, Quarterly Sampling Report No. 1, December 1988.
- RCRA Ground Water Sampling, Quarterly Sampling Report No. 2, March 1989.
- RCRA Ground Water Sampling, Quarterly Sampling Report No. 3, July 1989.
- Specific Plan for a Ground Water Quality Assessment Program, June 1989.
- Interim Response Action Plan, 317 Area Soil and Ground Water Remediation, June 1989.
- Site Ground Water Sampling and Analysis Plan, Appendix IV of 40 CFR 264.
- RCRA Ground Water Sampling, Quarterly Sampling Report No. 4, September 1989.
- Statistical Analysis--Well MW-2 Versus MW-1 and MW-3, October 1989.
- RCRA Ground Water Sampling, Quarterly Sampling Report No. 5, March 1990.
- RCRA Ground Water Sampling, Quarterly Sampling Report No. 6, May 1990.
- RCRA Ground Water Sampling, Quarterly Sampling Report No. 7, June 1990.
- RCRA Ground Water Sampling, Quarterly Sampling Report No. 8, October 1990.
- RCRA Ground Water Sampling, Quarterly Sampling Report No. 9, January 1991.
- RCRA Ground Water Sampling, Quarterly Sampling Report No. 10, April 1991.

In addition, the "Verification Sampling Results at Selected RCRA Units," dated March 1988, was submitted to DHS and EPA in fulfillment of the RCRA closure plan, regarding soil sampling of the near-surface soils at Areas 317 and 342.

11.0 REMARKS/SIGNATURES

The recommendations contained in this report represent our professional opinions. These opinions are based on currently available information and were developed in accordance with currently accepted hydrogeologic and engineering practices at this time and location. Other than this, no warranty is implied or intended.

DELTA ENVIRONMENTAL CONSULTANTS, INC.

PREPARED BY:

James R. Brownell, R.G.
California Registered
Geologist #5078

Date 7/26/91

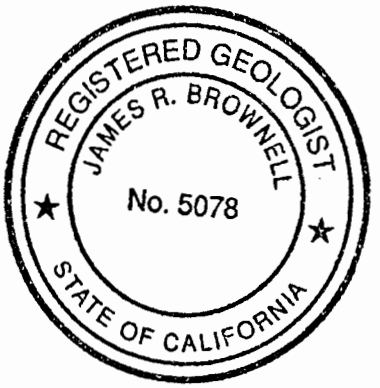

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TABLE 1

Potentiometric Surface Elevations
RCRA Ground Water Monitoring Wells
Bermite Division, Whittaker Corporation

Well No.	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6
Top of Casing Elevation (NGVD)	1561.32	1424.17	1538.51	1538.43	1493.37	1521.09
Date	Potentiometric Surface Elevations (NGVD)[a]					
12/23/87	1107.81	1104.11	---[b]			
01/27/88	1108.03	---	1109.51			
02/03/88	1108.32	1104.62	1109.88			
02/04/88	1108.36	1104.59	1109.14			
02/05/88	1108.36	1104.56	1109.17			
02/09/88	1108.24	1104.64	1109.13			
02/10/88	1108.28	1104.67	1109.27			
02/12/88	1108.28	1104.67	1109.27			
02/19/88	1108.11	1104.50	1108.86			
03/28/88	1107.69	1104.17	1108.23			
04/05/88	1107.76	1104.09	1108.23			
04/12/88	1107.66	1104.13	1108.23			
04/19/88	1107.56	1104.05	1108.23			
04/26/88	1107.61	1104.13	1108.23			
05/02/88	1107.86	1105.05	1108.23			
07/27/88	1103.58	1102.77	1104.19	1102.61		
10/03/88	1101.75	1098.12	1102.11	1100.77		
01/23/89	1099.82	1096.38	1100.25	1098.92		
04/17/89	1097.37	1093.89	1097.62	1096.05		
07/27/89	1094.67	1090.87	1094.85	1093.53	1093.02	1093.15
08/10/89	1093.93	1090.29	1094.09	1092.89	1092.32	1092.49
08/18/89	1093.62	1089.97	1093.76	1092.64	1092.03	1092.19
10/30/89	1092.07	1088.79	1092.16	1091.08	1090.62	1090.64
01/24/90	1090.56	1087.36	1090.54	1089.68	1089.17	1089.50
04/16/90	1088.66	1085.40	1088.78	1087.83	1087.23	1087.32
07/16/90	1083.56	1079.65	1083.53	1082.29	1081.41	1081.85
10/17/90	1079.91	1076.29	1079.78	1078.86	1078.25	1078.56
01/28/91	1076.52	1072.90	1076.54	1075.46	1074.64	1074.91
04/22/91	1071.22	1066.77	1071.29	1069.75	1068.90	1069.25

[a]National Geodetic Vertical Datum.
[b]Measurement not recorded.

TABLE 2

Well Evacuation
Bermite Division, Whittaker Corporation

		Evacuation	Sampling[a]	
Well No.	Date Pump Started[b]	Approximate Duration of Pumping (minutes)	Duration of Pumping (minutes)	Time and Date of Sample Collection
MW-1	04/22/91	1380	140	12:20 (04/23/91)
MW-2	04/22/91	1380	20	10:20 (04/23/91)
MW-3	04/22/91	1380	170	12:50 (04/23/91)
MW-4	04/22/91	1380	110	11:50 (04/23/91)
MW-5	04/22/91	1380	85	11:25 (04/23/91)
MW-6	04/22/91	1380	55	10:55 (04/23/91)

[a]Flow rate from wells was reduced prior to sampling.
Actual sample extraction flow rate of all wells equals approximately 100 ml/minute.
[b]All pumps started between 10:45 and 11:10.

TABLE 3

Well Stabilization Tests
Bermite Division, Whittaker Corporation

Well	Temperature (°C)	pH	Specific Conductance (umhos)	Time
MW-1	22.6	6.65	360	14:35 (04/22/91)
	22.0	6.70	380	07:14 (04/23/91)
	22.5	6.75	380	09:28 (04/23/91)
MW-2	21.8	6.15	2,570	14:48 (04/22/91)
	21.5	6.25	2,590	07:30 (04/23/91)
	22.0	6.25	2,610	09:40 (04/23/91)
MW-3	23.0	6.50	430	14:19 (04/22/91)
	23.0	6.75	430	07:00 (04/23/91)
	23.5	6.70	430	09:15 (04/23/91)
MW-4	22.5	6.75	370	14:05 (04/22/91)
	21.8	6.75	370	06:44 (04/23/91)
	22.0	6.80	370	09:05 (04/23/91)
MW-5	22.9	6.80	370	13:33 (04/22/91)
	22.4	6.75	380	06:28 (04/23/91)
	22.5	6.82	380	08:52 (04/23/91)
MW-6	23.6	6.50	360	13:50 (04/22/91)
	23.0	6.45	360	06:15 (04/23/91)
	23.5	6.55	360	08:40 (04/23/91)

TABLE 4

Schedule of Parameter Analysis, Analysis Methods,
and Sample Container Requirements
Bermite Division, Whittaker Corporation

Parameter	Analysis Method	Amount of Sample Collected	Type of Container
Indicator Parameters[a]			
pH Specific Conductance	EPA 9040 EPA 9050	4 x 500 ml	Plastic
Total Organic Carbon	EPA 9060	4 x 250 ml	Amber glass, TFE-lined cap
Total Organic Halogen	EPA 9020	4 x 250 ml	Amber glass, TFE-lined cap
Ground Water Quality Parameters			
Analyze one sample per well.			
Sulfate/Chloride	EPA 9035		
Total Phosphate	Std. Method 424F	1 x 500 ml	Plastic
Hazardous Constituent Parameters			
Dissolved Metals	ICP/EPA 6010	1 x 1000 ml	Plastic
Volatile Organics	EPA 8240	3 x 40 ml TFE-lined cap	Amber glass

[a]Four replicates for each parameter collected and analyzed per well.

TABLE 5

List of Volatile Organic Compounds Analyzed by EPA Method 624
Bermite Division, Whittaker Corporation

Compound	Compound
Benzene	1,1-Dichloroethene
Bromodichloromethane	trans-1,2-Dichloroethene
Bromoform	1,2-Dichloropropane
Bromomethane	cis-1,3-Dichloropropene
Carbon Tetrachloride	trans-1,3-Dichloropropene
Chlorobenzene	Ethyl Benzene
Chloroethane	Methylene Chloride
Chloroform	1,1,2,2-Tetrachloroethane
Chloromethane	Tetrachloroethene
Dibromochloromethane	Toluene
1,2-Dichlorobenzene	1,1,1-Trichloroethane
1,3-Dichlorobenzene	1,1,2-Trichloroethane
1,4-Dichlorobenzene	Trichloroethene
1,1-Dichloroethane	Trichlorofluoromethane
1,2-Dichloroethane	Vinyl Chloride
	Xylenes

TABLE 6

List of Dissolved Metals Analyzed by ICP/EPA Method 6010

Antimony	Lead
Arsenic	Mercury
Barium	Nickel
Cadmium	Selenium
Chromium	Silver
Copper	Thallium

TABLE 7

Key to Analysis Designation Labels on Sample Containers
Bermite Division, Whittaker Corporation

Analysis Designation	Parameter(s) to be Analyzed
A	pH Specific Conductance (temperature corrected)
B	Total Organic Carbon (TOC)
C	Total Organic Halogen (TOX)
H	Sulfate, Chloride
I	Total Phosphate
K	Dissolved Metals Ar, Ba, Cd, Cr, Pb, Hg, Se, Cu, Sb, Tl
O	Volatile Organics

Each sample container was labeled with a unique sample number. The form of each label was as follows:

Well I.D./Analysis Designation/Sample Event No./Replicate No.

Where:

Well I.D. = MW-1, MW-2, MW-3, MW-4, MW-5 or MW-6

Analysis Designation = A through O according to above table.

Sample Event No. = 1 through present event number.

Replicate No. = 1 through 4.

NOTE: Absence of Replicate number indicates that replicate samples were not required.

TABLE 8

Order of Sample Collection
Bermite Division, Whittaker Corporation

1. Volatile Organics
2. Total Organic Carbon (TOC)
3. Total Organic Halogen (TOX)
4. pH, Specific Conductance
5. Dissolved Metals
6. Sulfate, Chloride
7. Total Phosphate

TABLE 9

History of Indicator Parameters in Ground Water Monitoring Wells
Bermite Division, Whittaker Corporation

Well	Date	Quarter	pH	Hydrogen Ion Conc.	Conductance (umhos/cm)	TOC (mg/l)	TOX (ug/l)
Detection Limit (Quarter 11)						1	5
MW-1	10/04/88	1	7.5	3.16E-08	579	<3	<100
	10/04/88	1	7.5	3.16E-08	617	<3	<100
	10/04/88	1	7.5	3.16E-08	599	<3	<100
	10/04/88	1	7.5	3.16E-08	595	<3	<100
	11/03/88	1					<100
	11/03/88	1					<100
	01/25/89	2	7.5	3.16E-08	567	5	<100
	01/25/89	2	7.5	3.16E-08	585	<3	<100
	01/25/89	2	7.4	3.98E-08	576	<3	<100
	01/25/89	2	7.5	3.16E-08	559	<3	<100
	04/17/89	3	7.2	6.31E-08		<3	<100
	04/17/89	3	7.2	6.31E-08		<3	<100
	04/17/89	3	7.2	6.31E-08		<3	<100
	04/17/89	3	7.2	6.31E-08		<3	<100
	07/27/89	4	7.5	3.16E-08	502	5	<100
	07/27/89	4	7.5	3.16E-08	495	<3	<100
	07/27/89	4	7.4	3.98E-08	502	<3	<100
	07/27/89	4	7.5	3.16E-08	502	<3	<100
	10/31/89	5	7.6	2.51E-08	525	<3	<100
	10/31/89	5	7.6	2.51E-08	539	<3	<100
	10/31/89	5	7.6	2.51E-08	525	<3	<100
	10/31/89	5	7.6	2.51E-08	508	<3	<100
	01/25/90	6	7.4	3.98E-08	580	<3	<100
	01/25/90	6	7.4	3.98E-08	571	<3	<100
	01/25/90	6	7.4	3.98E-08	566	<3	<100
	01/25/90	6	7.4	3.98E-08	564	<3	<100
	04/17/90	7	7.6	2.51E-08	501	<4	<20
	04/17/90	7	7.5	3.16E-08	506	<4	<20
	04/17/90	7	7.5	3.16E-08	506	<4	<20
	04/17/90	7	7.6	2.51E-08	501	<4	<20
	07/17/90	8	8.3	5.01E-09	560	<4	<20
	07/17/90	8	8.2	6.31E-09	560	<4	<20
	07/17/90	8	8.3	5.01E-09	499	<4	<20
	07/17/90	8	8.3	5.01E-09	499	<4	<20
	10/18/90	9	7.3	5.01E-08	544	<1	<100
	10/18/90	9	7.5	3.16E-08	544	<1	<100
	10/18/90	9	7.5	3.16E-08	544	<1	<100
	10/18/90	9	7.3	5.01E-08	544	<1	150
	01/29/91	10	7.5	3.16E-08	583	1.4	<5
	01/29/91	10	7.5	3.16E-08	561	1.4	<5
	01/29/91	10	7.5	3.16E-08	565	1.3	<5
	01/29/91	10	7.5	3.16E-08	581	1.3	<5
	04/23/91	11	7.7	2.00E-08	559	3.4	<5
	04/23/91	11	7.7	2.00E-08	558	1.3	<5
	04/23/91	11	7.7	2.00E-08	559	1.4	<5
	04/23/91	11	7.6	2.15E-08	558	1.2	<5

TABLE 9-Continued

History of Indicator Parameters in Ground Water Monitoring Wells
Bermite Division, Whittaker Corporation

Well	Date	Quarter	pH	Hydrogen Ion Conc.	Conductance (umhos/cm)	TOC (mg/l)	TOX (ug/l)
Detection Limit (Quarter 11)						1	5
MW-2	10/04/88	1	6.8	1.58E-07	3725	5	115
	10/04/88	1	6.8	1.58E-07	3845	4	625
	10/04/88	1	6.8	1.58E-07	3644	6	250
	10/04/88	1	7.0	1.00E-07	3652	4	240
	11/03/88	1					<100
	11/03/88	1					<100
	01/25/89	2	7.0	1.00E-07	3852	<3	120
	01/25/89	2	7.0	1.00E-07	3897	<3	130
	01/25/89	2	7.0	1.00E-07	3897	4	110
	01/25/89	2	7.0	1.00E-07	3897	<3	120
	04/17/89	3	6.7	2.00E-07		3	135
	04/17/89	3	6.7	2.00E-07		4	110
	04/17/89	3	6.7	2.00E-07		5	100
	04/17/89	3	6.7	2.00E-07		4	115
	07/27/89	4	6.9	1.26E-07	4298	9	120
	07/27/89	4	6.8	1.58E-07	4246	<3	125
	07/27/89	4	6.7	2.00E-07	4298	<3	100
	07/27/89	4	6.9	1.26E-07	4298	<3	100
	10/31/89	5	7.0	1.00E-07	3970	<3	<100
	10/31/89	5	6.9	1.26E-07	3950	<3	<100
	10/31/89	5	6.9	1.26E-07	4060	<3	<100
	10/31/89	5	6.9	1.26E-07	4040	7.8	<100
	01/25/90	6	6.7	2.00E-07	4009	<3	<100
	01/25/90	6	6.6	2.51E-07	4069	<3	<100
	01/25/90	6	6.7	2.00E-07	4069	<3	<100
	01/25/90	6	6.7	2.00E-07	3917	<3	<100
	04/17/90	7	6.6	2.51E-07	3665	<4	70
	04/17/90	7	6.6	2.51E-07	3695	<4	69
	04/17/90	7	6.6	2.51E-07	3658	<4	72
	04/17/90	7	6.7	2.00E-07	3680	<4	74
	07/17/90	8	7.6	2.51E-08	3587	4	58
	07/17/90	8	7.7	2.00E-08	3587	4	59
	07/17/90	8	7.8	1.58E-08	3547	4	65
	07/17/90	8	7.8	1.58E-08	3587	<4	58
	10/18/90	9	6.8	1.58E-07	3882	3.6	<100
	10/18/90	9	6.8	1.58E-07	3882	3.4	<100
	10/18/90	9	6.9	1.26E-07	3882	3.7	<100
	10/18/90	9	6.8	1.58E-07	3882	3.6	<100
	01/29/91	10	6.7	2.00E-07	3990	4.7	85
	01/29/91	10	6.7	2.00E-07	3990	5.9	64
	01/29/91	10	6.7	2.00E-07	3990	1.3	71
	01/29/91	10	6.7	2.00E-07	4000	1.4	74
	04/23/91	11	7.0	1.00E-07	3920	6.0	74
	04/23/91	11	7.0	1.00E-07	3930	5.7	78
	04/23/91	11	7.0	1.00E-07	3930	4.7	82
	04/23/91	11	7.0	1.00E-07	3930	4.9	82

TABLE 9-Continued

History of Indicator Parameters in Ground Water Monitoring Wells
Bermite Division, Whittaker Corporation

Well	Date	Quarter	pH	Hydrogen Ion Conc.	Conductance (umhos/cm)	TOC (mg/l)	TOX (ug/l)
Detection Limit (Quarter 11)						1	5
MW-3	10/04/88	1	7.4	3.98E-08	697	<3	485
	10/04/88	1	7.5	3.16E-08	677	<3	410
	10/04/88	1	7.5	3.16E-08	730	<3	500
	10/04/88	1	7.5	3.16E-08	691	<3	<100
	11/03/88	1					<100
	11/03/88	1					<100
	01/25/89	2	7.8	1.58E-08	681	<3	<100
	01/25/89	2	7.6	2.51E-08	681	<3	<100
	01/25/89	2	7.6	2.51E-08	669	<3	<100
	01/25/89	2	7.9	1.26E-08	624	<3	<100
	04/17/89	3	7.3	5.01E-08		<3	<100
	04/17/89	3	7.3	5.01E-08		<3	<100
	04/17/89	3	7.3	5.01E-08		<3	<100
	04/17/89	3	7.3	5.01E-08		<3	<100
	07/27/89	4	7.5	3.16E-08	661	<3	<100
	07/27/89	4	7.5	3.16E-08	661	<3	<100
	07/27/89	4	7.5	3.16E-08	661	<3	<100
	07/27/89	4	7.5	3.16E-08	661	<3	<100
	10/31/89	5	7.5	3.16E-08	617	<3	<100
	10/31/89	5	7.5	3.16E-08	615	<3	<100
	10/31/89	5	7.5	3.16E-08	617	<3	<100
	10/31/89	5	7.6	2.51E-08	620	<3	<100
	01/25/90	6	7.1	7.94E-08	641	8	<100
	01/25/90	6	7.2	6.31E-08	645	<3	<100
	01/25/90	6	7.2	6.31E-08	645	8	<100
	01/25/90	6	7.2	6.31E-08	634	11	<100
	04/17/90	7	7.3	5.01E-08	588	<4	<20
	04/17/90	7	7.3	5.01E-08	596	<4	<20
	04/17/90	7	7.3	5.01E-08	590	<4	<20
	04/17/90	7	7.4	3.98E-08	586	<4	<20
	07/17/90	8	8.3	5.01E-09	614	<4	<20
	07/17/90	8	8.3	5.01E-09	580	<4	<20
	07/17/90	8	8.2	6.31E-09	580	<4	<20
	07/17/90	8	8.1	7.94E-09	580	<4	<20
	10/23/90	9	7.6	2.51E-08	642	<1	<100
	10/23/90	9	7.6	2.51E-08	642	1.2	<100
	10/23/90	9	7.6	2.51E-08	642	<1	<100
	10/23/90	9	7.7	2.00E-08	642	<1	<100
	01/29/91	10	7.2	6.31E-08	655	2.4	<5
	01/29/91	10	7.3	5.01E-08	660	2.3	<5
	01/29/91	10	7.3	5.01E-08	655	2.2	<5
	01/29/91	10	7.3	5.01E-08	655	1.8	<5
	04/23/91	11	7.6	2.51E-08	630	1.4	<5
	04/23/91	11	7.5	3.16E-08	630	1.5	<5
	04/23/91	11	7.5	3.16E-08	629	3.6	<5
	04/23/91	11	7.6	2.51E-08	628	1.6	<5

TABLE 9-Continued

History of Indicator Parameters in Ground Water Monitoring Wells
Bermite Division, Whittaker Corporation

Well	Date	Quarter	pH	Hydrogen Ion Conc.	Conductance (umhos/cm)	TOC (mg/l)	TOX (ug/l)
Detection Limit (Quarter 11)						1	5
MW-4	10/04/88	1	7.6	2.51E-08	595	<3	<100
	10/04/88	1	7.7	2.00E-08	622	<3	140
	10/04/88	1	7.7	2.00E-08	626	<3	120
	10/04/88	1	7.7	2.00E-08	579	<3	100
	11/03/88	1					<100
	11/03/88	1					<100
	01/25/89	2	7.6	2.51E-08	527	<3	<100
	01/25/89	2	7.6	2.51E-08	513	<3	<100
	01/25/89	2	7.5	3.16E-08	520	<3	<100
	01/25/89	2	7.5	3.16E-08	520	<3	<100
	04/17/89	3	7.4	3.98E-08		<3	3060
	04/17/89	3	7.4	3.98E-08		4	3080
	04/17/89	3	7.5	3.16E-08		<3	4080
	04/17/89	3	7.5	3.16E-08		<3	4300
	07/27/89	4	7.8	1.58E-08	595	<3	990
	07/27/89	4	7.7	2.00E-08	595	8	730
	07/27/89	4	7.8	1.58E-08	595	4	910
	07/27/89	4	7.8	1.58E-08	599	<3	800
	10/31/89	5	7.7	2.00E-08	559	<3	160
	10/31/89	5	7.6	2.51E-08	577	<3	110
	10/31/89	5	7.6	2.51E-08	573	<3	130
	10/31/89	5	7.6	2.51E-08	573	<3	110
	01/25/90	6	7.6	2.51E-08	587	4	119
	01/25/90	6	7.6	2.51E-08	574	7	114
	01/25/90	6	7.6	2.51E-08	574	8	114
	01/25/90	6	7.6	2.51E-08	574	8	<100
	04/17/90	7	7.7	2.00E-08	535	<4	<20
	04/17/90	7	7.6	2.51E-08	527	<4	<20
	04/17/90	7	7.6	2.51E-08	521	<4	<20
	04/17/90	7	7.6	2.51E-08	521	<4	<20
	07/17/90	8	8.4	3.98E-09	515	<4	<20
	07/17/90	8	8.4	3.98E-09	515	<4	<20
	07/17/90	8	8.4	3.98E-09	515	<4	<20
	07/17/90	8	8.3	5.01E-09	515	<4	<20
	10/18/90	9	7.5	3.16E-08	544	<1	<100
	10/18/90	9	7.5	3.16E-08	544	<1	<100
	10/18/90	9	7.5	3.16E-08	544	<1	<100
	10/18/90	9	7.6	2.51E-08	544	<1	<100
	01/29/91	10	7.6	2.51E-08	583	1.9	5
	01/29/91	10	7.6	2.51E-08	567	1.8	<5
	01/29/91	10	7.6	2.51E-08	567	2.4	<5
	01/29/91	10	7.6	2.51E-08	565	2.3	<5
	04/23/91	11	7.8	1.58E-08	540	3.0	<5
	04/23/91	11	7.8	1.58E-08	541	1.3	<5
	04/23/91	11	7.8	1.58E-08	541	1.3	<5
	04/23/91	11	7.9	1.26E-08	542	1.2	<5

TABLE 9-Continued

History of Indicator Parameters in Ground Water Monitoring Wells
Bermite Division, Whittaker Corporation

Well	Date	Quarter	pH	Hydrogen Ion Conc.	Conductance (umhos/cm)	TOC (mg/l)	TOX (ug/l)
Detection Limit (Quarter 11)						1	5
MW-5	10/31/89	5	7.7	2.00E-08	544	<3	<100
	10/31/89	5	7.6	2.51E-08	541	<3	<100
	10/31/89	5	7.6	2.51E-08	544	<3	<100
	10/31/89	5	7.6	2.51E-08	544	<3	<100
	01/25/90	6	7.5	3.16E-08	585	8	<100
	01/25/90	6	7.5	3.16E-08	583	9	<100
	01/25/90	6	7.5	3.16E-08	571	9	<100
	01/25/90	6	7.5	3.16E-08	574	<3	<100
	04/17/90	7	7.6	2.51E-08	509	<4	<20
	04/17/90	7	7.6	2.51E-08	508	<4	<20
	04/17/90	7	7.6	2.51E-08	516	<4	<20
	04/17/90	7	7.6	2.51E-08	514	<4	<20
	07/18/90	8	8.0	1.00E-08	572	<4	<20
	07/18/90	8	8.0	1.00E-08	560	<4	<20
	07/18/90	8	8.0	1.00E-08	542	<4	<20
	07/18/90	8	8.0	1.00E-08	566	<4	<20
	10/18/90	9	7.6	2.51E-08	544	<1	<100
	10/18/90	9	7.7	2.00E-08	544	<1	<100
	10/18/90	9	7.7	2.00E-08	544	<1	<100
	10/18/90	9	7.8	1.58E-08	544	<1	<100
	01/29/91	10	7.6	2.51E-08	545	2.3	<5
	01/29/91	10	7.6	2.51E-08	554	2.3	<5
	01/29/91	10	7.6	2.51E-08	552	2.5	<5
	01/29/91	10	7.6	2.51E-08	556	2.0	<5
	04/23/91	11	7.8	1.58E-08	542	1.4	<5
	04/23/91	11	7.8	1.58E-08	543	1.6	<5
	04/23/91	11	8.1	7.94E-09	544	1.4	<5
	04/23/91	11	8.0	1.00E-08	543	2.0	<57

Dissolved Metals Water Quality History
Bermite Division, Whittaker Corporation
concentrations in micrograms per liter (ug/l)

Monitoring Well	Date	Quarter	Antimony	Arsenic	Barium	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium
MCL[a]				50	1000	10	50		50		2	10	50	
MW-1	10/04/88	1	<100	<10	<100	<1	<10	<50	<10	<1	---[b]	<5	<10	<100
	01/25/89	2	<100	<10	<100	<1	<10	<50	<10	<1	---	<5	<10	<100
	04/17/89	3	<100	<10	<100	<1	<10	<50	<10	<1	---	<5	<10	<100
	07/27/89	4	<100	<10	<100	<1	<10	<50	<10	<1	---	<5	<10	<100
	10/31/89	5	<100	<10	<100	<1	<10	<50	<10	<1	---	<5	---	<100
	01/25/90	6	<1000	<1000	<100	<100	<200	<100	<800	<1	<100	<2000	<100	<300
	04/17/90	7	<1000	<1000	<100	<100	<200	<100	<800	<1	<100	<2000	<100	<300
	07/17/90	8	<1000	<1000	<100	<100	<200	<100	<800	<1	<100	<2000	<100	<300
	10/18/90	9	<100	<10	<100	<1	<10	100	<10	<1	---	<5	---	<100
	01/29/91	10	<100	<50	<100	<10	<50	<100	<50	<1	---	<10	---	<100
	04/23/91	11	<100	<50	<100	<10	<50	<100	<50	<1	---	<10	---	<100
MW-2	10/04/88	1	<100	<10	600	<1	<10	<50	<10	<1	---	<5	<10	<100
	01/25/89	2	<100	<10	600	<1	<10	<50	<10	<1	---	<5	<10	<100
	04/17/89	3	<100	<10	600	<1	<10	<50	<10	<1	---	<5	<10	<100
	07/27/89	4	<100	<10	600	<1	<10	<50	<10	<1	---	<5	<10	<100
	10/31/89	5	<100	<10	600	<1	<10	<50	<10	<1	---	<5	---	<100
	01/25/90	6	<1000	<1000	600	<100	<200	<100	<800	<1	<100	<2000	<100	<300
	04/17/90	7	<1000	<1000	600	<100	<200	<100	<800	<1	<100	<2000	<100	<300
	07/17/90	8	<1000	<1000	600	<100	<200	<100	<800	<1	<100	<2000	<100	<300
	10/18/90	9	<100	<10	600	<1	<10	100	<10	<1	---	<5	---	<100
	01/29/91	10	<100	<50	600	<10	<50	<100	<50	<1	---	<10	---	<100
	04/23/91	11	<100	<50	600	<10	<50	<100	<50	<1	---	<10	---	<100
MW-3	10/04/88	1	<100	<10	<100	<1	<10	<50	<10	<1	---	<5	<10	<100
	01/25/89	2	<100	<10	<100	<1	<10	<50	<10	<1	---	<5	<10	<100
	04/17/89	3	<100	<10	<100	<1	<10	<50	<10	<1	---	<5	<10	<100
	07/27/89	4	<100	<10	<100	<1	<10	<50	<10	<1	---	<5	<10	<100
	10/31/89	5	<100	<10	<100	<1	<10	<50	<10	<1	---	<5	---	<100
	01/25/90	6	<1000	<1000	<100	<100	<200	<100	<800	<1	<100	<2000	<100	<300
	04/17/90	7	<1000	<1000	<100	<100	<200	<100	<800	<1	<100	<2000	<100	<300
	07/17/90	8	<1000	<1000	<100	<100	<200	<100	<800	<1	<100	<2000	<100	<300
	10/18/90	9	<100	<10	<100	<1	<10	100	<10	<1	---	<5	---	<100
	01/29/91	10	<100	<50	<100	<10	<50	<100	<50	<1	---	<10	---	<100
	04/23/91	11	<100	<50	<100	<10	<50	<100	<50	<1	---	<10	---	<100
MW-4	10/04/88	1	<100	<10	<100	<1	<10	<50	<10	<1	---	<5	<10	<100
	01/25/89	2	<100	<10	<100	<1	<10	<50	<10	<1	---	<5	<10	<100
	04/17/89	3	<100	<10	<100	<1	<10	<50	<10	<1	---	<5	<10	<100
	07/27/89	4	<100	<10	<100	<1	<10	<50	<10	<1	---	<5	<10	<100

[a]EPA Primary Drinking Water Standards--Maximum Contaminant Level.
[b]Test not run.

TABLE 11

History of Ground Water Quality Parameters - Nutrients
Bermite Division, Whittaker Corporation

Monitoring Well	Date	Quarter	Total Phosphate (mg/l)[a]	SO_4- (mg/l)	C1- (mg/l)
MW-1	10/04/88	1	<0.1	11	
	01/25/89	2	<0.1	22	
	04/17/89	3	<0.1	11	
	07/27/89	4	<0.1	13	
	10/31/89	5	<0.1	10	83
	01/25/90	6	<0.1	16	85
	04/17/90	7	<0.1	11	88
	07/17/90	8	<0.1	10	82
	10/18/90	9	<0.1	23	98
	01/29/91	10	<0.1	8	96
MW-2	10/04/88	1	<0.1	8	
	01/25/89	2	<0.1	17	
	04/17/89	3	<0.1	67	
	07/27/89	4	<0.1	9	
	10/31/89	5	<0.1	8	1135
	01/25/90	6	<0.1	13	1200
	04/17/90	7	<0.1	9	1160
	07/17/90	8	<0.1	9	1116
	10/18/90	9	0.1	22	1125
	01/29/91	10	<0.1	8	1180
MW-3	10/04/88	1	<0.1	73	
	01/25/89	2	<0.1	74	
	04/17/89	3	<0.1	9	
	07/27/89	4	<0.1	65	
	10/31/89	5	<0.1	68	35
	01/25/90	6	<0.1	74	36
	04/17/90	7	<0.1	60	46
	07/17/90	8	<0.1	67	39
	10/23/90	9	<0.1	15	34
	01/29/91	10	<0.1	80	54
MW-4	10/04/88	1	<0.1	31	
	01/25/89	2	<0.1	43	
	04/17/89	3	<0.1	36	
	07/27/89	4	<0.1	33	
MCL[b]			NA[c]	250	250

[a]Milligrams per liter (parts per million - ppm).
[b]EPA Primary Drinking Water Standards - Maximum Contaminant Level.
[c]Not applicable.

TABLE 12

Volatile Organic Compounds in Ground Water Monitoring Wells
Concentrations in micrograms per liter (ug/l)

Monitoring Well	Date	Quarter	Acetone	Benzene	Bromo-dichloro-methane	Bromoform	Bromo-methane	Carbon Tetra-chloride	Chloro-benzene	Chloro-ethane	Chloro-form
SNARL[a]			700	70	100	100	NSL[b]	20	NSL	NSL	100
MW-1	07/29/88	(1)[c]	<50	<5	<5	<5	<10	<5	<5	<10	<5
	08/15/88	(1)	<50	<5	<5	<5	<10	<5	<5	<10	<5
	01/27/88	(1)	<50	<5	<5	<5	<10	<5	<5	<10	<5
	10/04/88	1	<50	<5	<5	<5	<10	<5	<5	<10	<5
	01/25/89	2	<50	<5	<5	<5	<10	<5	<5	<10	<5
	04/17/89	3	<50	<5	<5	<5	<10	<5	<5	<10	<5
	07/27/89	4	<50	<5	<5	<5	<5	<5	<5	<5	<5
MW-2	12/16/87	(1)	<50	<5	<5	<5	<10	<5	<5	<10	<5
	01/27/88	(1)	<50	<5	<5	<5	<10	<5	<5	<10	<5
	07/29/88	(1)	<50	<5	<5	<5	<10	<5	<5	<10	<5
	08/15/88	(1)	<50	<5	<5	<5	<10	<5	<5	<10	<5
	10/04/88	1	<50	<5	<5	<5	<10	<5	<5	<10	<5
	01/25/89	2	<50	<5	<5	<5	<10	<5	<5	<10	<5
	04/17/89	3	<50	<5	<5	<5	<10	<5	<5	<10	<5
	07/27/89	4	<50	<5	<5	<5	<5	<5	<5	<5	<5
MW-3	02/17/88	(1)	<50	<5	<5	<5	<10	<5	<5	<10	<5
	05/27/88	(1)	<50	<5	<5	<5	<10	<5	<5	<10	<5
	07/29/88	(1)	<50	<5	<5	<5	<10	<5	<5	<10	<5
	08/15/88	(1)	<50	<5	<5	<5	<10	<5	<5	<10	<5
	10/04/88	1	<50	<5	<5	<5	<10	<5	<5	<10	<5
	01/25/89	2	<50	<5	<5	<5	<10	<5	<5	<10	<5
	04/17/89	3	<50	<5	<5	<5	<10	<5	<5	<10	<5
	07/27/89	4	<50	<5	<5	<5	<5	<5	<5	<5	<5

TABLE 12-Continued

Volatile Organic Compounds in Ground Water Monitoring Wells
Concentrations in micrograms per liter (ug/l)

Monitoring Well	Date	Quarter	Acetone	Benzene	Bromo-Dichloro-methane	Bromoform	Bromo-methane	Carbon Tetra-chloride	Chloro-benzene	Chloro-ethane	Chloro-form
SNARL			700	70	100	100	NSL	20	NSL	NSL	100
MW-4	06/15/88	(1)	<50	<5	<5	<5	<10	<5	<5	<10	<5
	07/29/88	(1)	<50	<5	<5	<5	<10	<5	<5	<10	<5
	08/15/88	(1)	<50	<5	<5	<5	<10	<5	<5	<10	<5
	10/04/88	1	<50	<5	<5	<5	<10	<5	<5	<10	<5
	01/25/89	2	<50	<5	<5	<5	<10	<5	<5	<10	<5
	04/17/89	3	<50	<5	<5	<5	<10	<5	<5	<10	<5
	05/17/89	3	<300	<50	<50	<50	<300	<50	<50	<300	<50
	07/27/89	4	<625	<62.5	<62.5	<62.5	<62.5	<62.5	<62.5	<62.5	<62.5
	10/31/89	5	<50	<5	<5	<5	<5	<5	<5	<5	<5
	01/25/90	6	ND[d]	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
	04/17/90	7	ND	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
	07/17/90	8	---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	10/18/90	9	---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	01/29/91	10	---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	04/23/91	11	---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
MW-5	10/31/89	5	<50	<5	<5	<5	<5	<5	<5	<5	<5
	01/25/90	6	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	04/17/90	7	ND	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
	07/19/90	8	---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	10/18/90	9	---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	01/29/91	10	---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	04/23/91	11	---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
MW-6	10/31/89	5	<50	<5	<5	<5	<5	<5	<5	<5	<5
	01/31/90	6	ND	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	04/17/90	7	ND	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
	07/19/90	8	---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	10/18/90	9	---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	01/29/91	10	---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	04/23/91	11	---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

TABLE 12-Continued

Volatile Organic Compounds in Ground Water Monitoring Wells
Concentrations in micrograms per liter (ug/l)

Monitoring Well No.	Date	Quarter	Chloro-methane	Dibromo-chloro-methane	1,2-dichloro-benzene	1,3-Dichloro-benzene	1,4-Dichloro-benzene	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	trans-1,2-Dichloro-ethene
SNARL			NSL	100	130	130	130	NSL	5	70	270
MW-1	07/29/88	(1)	<10	<5	<5	<5	<5	<5	<5	<5	<5
	08/15/88	(1)	<10	<5	<5	<5	<5	<5	<5	<5	<5
	01/27/88	(1)	<10	<5	<5	<5	<5	<5	<5	<5	<5
	10/04/88	1	<10	<5	<5	<5	<5	<5	<5	<5	<5
	01/25/89	2	<10	<5	<5	<5	<5	<5	<5	<5	<5
	04/17/89	3	<10	<5	<5	<5	<5	<5	<5	<5	<5
	07/27/89	4	<5	<5	<5	<5	<5	<5	<5	<5	<5
MW-2	12/16/87	(1)	<10	<5	<5	<5	<5	<5	<5	<5	<5
	01/27/88	(1)	<10	<5	<5	<5	<5	<5	<5	<5	<5
	07/29/88	(1)	<10	<5	<5	<5	<5	<5	<5	<5	<5
	08/15/88	(1)	<10	<5	<5	<5	<5	<5	<5	<5	<5
	10/04/88	1	<10	<5	<5	<5	<5	<5	<5	<5	<5
	01/25/89	2	<10	<5	<5	<5	<5	<5	<5	<5	<5
	04/17/89	3	<10	<5	<5	<5	<5	<5	<5	<5	<5
	07/27/89	4	<5	<5	<5	<5	<5	<5	<5	<5	<5
MW-3	02/17/88	(1)	<10	<5	<5	<5	<5	<5	<5	<5	<5
	05/27/88	(1)	<10	<5	<5	<5	<5	<5	<5	<5	<5
	07/29/88	(1)	<10	<5	<5	<5	<5	<5	<5	<5	<5
	08/15/88	(1)	<10	<5	<5	<5	<5	<5	<5	<5	<5
	10/04/88	1	<10	<5	<5	<5	<5	<5	<5	<5	<5
	01/25/89	2	<10	<5	<5	<5	<5	<5	<5	<5	<5
	04/17/89	3	<10	<5	<5	<5	<5	<5	<5	<5	<5
	07/37/89	4	<5	<5	<5	<5	<5	<5	<5	<5	<5

TABLE 12-Continued

Volatile Organic Compounds in Ground Water Monitoring Wells
Concentrations in micrograms per liter (ug/l)

Monitoring Well No.	Date	Quarter	Chloro-methane	Dibromo-chloro-methane	1,2-dichloro-benzene	1,3-Dichloro-benzene	1,4-Dichloro-benzene	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	trans-1,2-Dichloro-ethene
SNARL			NSL	100	130	130	130	NSL	5	70	270
MW-4	06/15/88	(1)	<10	<5	<5	<5	<5	<5	<5	<5	<5
	07/29/88	(1)	<10	<5	<5	<5	<5	<5	<5	<5	<5
	08/15/88	(1)	<10	<5	<5	<5	<5	<5	<5	<5	<5
	10/04/88	1	<10	<5	<5	<5	<5	<5	<5	<5	<5
	01/25/89	2	<10	<5	<5	<5	<5	<5	<5	<5	<5
	04/17/89	3	<10	<5	<5	<5	<5	<5	<5	14.3	<5
	05/17/89	3	<300	<50	<50	<50	<50	<50	<50	<50	<50
	07/27/89	4	<62.5	<62.5	<62.5	<62.5	<62.5	<62.5	<62.5	<62.5	<62.5
	10/31/89	5	<5	<5	<5	<5	<5	<5	<5	<5	<5
	01/25/90	6	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5	<12.5
	04/17/90	7	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
	07/17/90	8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	10/18/90	9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	01/29/91	10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	04/23/91	11	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
MW-5	10/31/89	5	<5	<5	<5	<5	<5	<5	<5	<5	<5
	01/25/90	6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	04/17/90	7	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
	07/19/90	8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	10/18/90	9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	01/29/91	10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	04/23/91	11	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
MW-6	10/31/89	5	<5	<5	<5	<5	<5	<5	<5	<5	<5
	01/31/90	6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	04/17/90	7	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
	07/19/90	8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	10/18/90	9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	01/29/91	10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	04/23/91	11	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

TABLE 12-Continued

Volatile Organic Compounds in Ground Water Monitoring Wells
Concentrations in micrograms per liter (ug/l)

Monitoring Well No.	Date	Quarter	1,2-Dichloro-propane	cis-1,3-Dichloro-propene	trans-1,3-Dichloro-propene	Ethyl-benzene	Methyl Ethyl ketone	Methylene Chloride	1,1,2,2-Tetra-chloro-ethane	Tetra-chloro-ethene	Toluene
SNARL			10	NSL	NSL	NSL	750	150	NSL	20	340
MW-1	07/29/88	(1)	<5	<5	<5	<5	<50	<5	<5	<5	<5
	08/15/88	(1)	<5	<5	<5	<5	<50	<5	<5	<5	<5
	01/27/88	(1)	<5	<5	<5	<5	<50	<5	<5	<5	<5
	10/04/88	1	<5	<5	<5	<5	<50	<5	<5	<5	<5
	01/25/89	2	<5	<5	<5	<5	<50	<5	<5	<5	<5
	04/17/89	3	<5	<5	<5	<5	<50	<5	<5	<5	<5
	07/27/89	4	<5	<5	<5	<5	<50	<5	<5	<5	<5
MW-2	12/16/87	(1)	<5	<5	<5	<5	<50	<5	<5	<5	<5
	01/27/88	(1)	<5	<5	<5	<5	<50	<5	<5	<5	<5
	07/29/88	(1)	<5	<5	<5	<5	<50	<5	<5	<5	<5
	08/15/88	(1)	<5	<5	<5	<5	<50	<5	<5	<5	<5
	10/04/88	1	<5	<5	<5	<5	<50	<5	<5	<5	<5
	01/25/89	2	<5	<5	<5	<5	<50	<5	<5	<5	<5
	04/17/89	3	<5	<5	<5	<5	<50	<5	<5	<5	<5
	07/27/89	4	<5	<5	<5	<5	<50	<5	<5	<5	<5
MW-3	02/17/88	(1)	<5	<5	<5	<5	<50	<5	<5	<5	<5
	05/27/88	(1)	<5	<5	<5	<5	<50	<5	<5	<5	<5
	07/29/88	(1)	<5	<5	<5	<5	<50	<5	<5	<5	<5
	08/25/88	(1)	<5	<5	<5	<5	<50	<5	<5	<5	<5
	10/04/88	1	<5	<5	<5	<5	<50	<5	<5	<5	<5
	01/25/89	2	<5	<5	<5	<5	<50	<5	<5	<5	<5
	04/17/89	3	<5	<5	<5	<5	<50	<5	<5	<5	<5
	07/27/89	4	<5	<5	<5	<5	<50	<5	<5	<5	<5

TABLE 12-Continued

Volatile Organic Compounds in Ground Water Monitoring Wells
Concentrations in micrograms per liter (ug/l)

Monitoring Well No.	Date	Quarter	1,2-Dichloro-propane	cis-1,3-Dichloro-propene	trans-1,3-Dichloro-propene	Ethyl-benzene	Methyl Ethyl ketone	Methylene chloride	1,1,2,2-Tetra-chloro-ethane	Tetra-chloro-ethene	Toluene
SNARL			10	NSL	NSL	NSL	750	150	NSL	20	340
MW-4	06/15/88	(1)	<5	<5	<5	<5	<5	<5	<5	<5	<5
	07/29/88	(1)	<5	<5	<5	<5	<5	<5	<5	<5	<5
	08/15/88	(1)	<5	<5	<5	<5	<5	<5	<5	<5	<5
	10/04/88	1	<5	<5	<5	<5	<5	<5	<5	<5	<5
	01/25/89	2	<5	<5	<5	<5	<5	<5	<5	<5	<5
	04/17/89	3	<5	<5	<5	<5	<5	<5	<5	11.7	<5
	05/17/89	3	<50	<50	<50	<50	<300	<300	<50	<50	<50
	07/27/89	4	<62.5	<62.5	<62.5	<62.5	<62.5	<62.5	<62.5	<62.5	<62.5
	10/31/89	5	<5	<5	<5	<5	<50	<5	<5	<5	<5
	01/25/90	6	<12.5	<12.5	<12.5	<12.5	ND	<12.5	<12.5	<12.5	<12.5
	04/17/90	7	<5.0	<5.0	<5.0	<5.0	ND	<5.0	<5.0	<5.0	<5.0
	07/17/90	8	<0.5	<0.5	<0.5	<0.5	---	<0.5	<0.5	<0.5	<0.5
	10/18/90	9	<0.5	<0.5	<0.5	<0.5	---	<0.5	<0.5	<0.5	<0.5
	01/29/91	10	<0.5	<0.5	<0.5	<0.5	---	<0.5	<0.5	<0.5	<0.5
	04/23/91	11	<0.5	<0.5	<0.5	<0.5	---	<0.5	<0.5	<0.5	<0.5
MW-5	10/31/89	5	<5	<5	<5	<5	<50	<5	<5	<5	<5
	01/25/90	6	<0.5	<0.5	<0.5	<0.5	ND	<0.5	<0.5	<0.5	<0.5
	04/17/90	7	<5.0	<5.0	<5.0	<5.0	ND	<5.0	<5.0	<5.0	<5.0
	07/19/90	8	<0.5	<0.5	<0.5	<0.5	---	<0.5	<0.5	<0.5	<0.5
	10/18/90	9	<0.5	<0.5	<0.5	<0.5	---	<0.5	<0.5	<0.5	<0.5
	01/29/91	10	<0.5	<0.5	<0.5	<0.5	---	<0.5	<0.5	<0.5	<0.5
	04/23/91	11	<0.5	<0.5	<0.5	<0.5	---	<0.5	<0.5	<0.5	<0.5
MW-6	01/31/89	5	<5	<5	<5	<5	<50	<5	<5	<5	<5
	01/31/90	6	<0.5	<0.5	<0.5	<0.5	ND	<0.5	<0.5	<0.5	<0.5
	04/17/90	7	<5.0	<5.0	<5.0	<5.0	ND	<5.0	<5.0	<5.0	<5.0
	07/19/90	8	<0.5	<0.5	<0.5	<0.5	---	<0.5	<0.5	<0.5	<0.5
	10/18/90	9	<0.5	<0.5	<0.5	<0.5	---	<0.5	<0.5	<0.5	<0.5
	01/29/91	10	<0.5	<0.5	<0.5	<0.5	---	<0.5	<0.5	<0.5	<0.5
	04/23/91	11	<0.5	<0.5	<0.5	<0.5	---	<0.5	<0.5	<0.5	<0.5

TABLE 12-Continued

Volatile Organic Compounds in Ground Water Monitoring Wells
Concentrations in micrograms per liter (ug/l)

Monitoring Well	Date	Quarter	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Trichloro-fluoro-methane	Vinyl Chloride	Xylenes
SNARL			200	NSL	75	NSL	2	420
MW-1	07/29/88	(1)	<5	<5	<5	<5	<10	<5
	08/15/88	(1)	<5	<5	<5	<5	<10	<5
	01/27/88	(1)	<5	<5	<5	<5	<10	<5
	10/04/88	1	<5	<5	<5	<5	<10	<5
	01/25/89	2	<5	<5	<5	<5	<10	<5
	04/17/89	3	<5	<5	<5	<5	<10	<5
	07/27/89	4	<5	<5	<5	<5	<5	<5
MW-2	12/16/87	(1)	<5	<5	<5	<5	<10	<5
	01/27/88	(1)	<5	<5	<5	<5	<10	<5
	07/29/88	(1)	<5	<5	<5	<5	<10	<5
	08/15/88	(1)	<5	<5	<5	<5	<10	<5
	10/04/88	1	<5	<5	<5	<5	<10	<5
	01/25/89	2	<5	<5	<5	<5	<10	<5
	04/17/89	3	<5	<5	<5	<5	<10	<5
	07/27/89	4	<5	<5	<5	<5	<5	<5
MW-3	02/17/88	(1)	<5	<5	<5	<5	<10	<5
	05/27/88	(1)	<5	<5	<5	<5	<10	<5
	07/29/88	(1)	<5	<5	<5	<5	<10	<5
	08/15/88	(1)	<5	<5	<5	<5	<10	<5
	10/04/88	1	<5	<5	<5	<5	<10	<5
	01/25/89	2	<5	<5	<5	<5	<10	<5
	04/17/89	3	<5	<5	<5	<5	<10	<5
	07/27/89	4	<5	<5	<5	<5	<5	<5

TABLE 12-Continued

Volatile Organic Compounds in Ground Water Monitoring Wells
Concentrations in micrograms per liter (ug/l)

Monitoring Well	Date	Quarter	1,1,1-Trichloro-ethane	1,1,2-Trichloro-ethane	Trichloro-ethene	Trichloro-fluoro-methane	Vinyl Chloride	Xylenes
SNARL			200	NSL	75	NSL	2	420
MW-4	06/15/88	(1)	<5	<5	<5	<5	<10	<5
	07/29/88	(1)	<5	<5	<5	<5	<10	<5
	08/15/88	(1)	<5	<5	<5	<5	<10	<5
	10/04/88	1	<5	<5	<5	<5	<10	<5
	01/25/89	2	<5	<5	<5	<5	<10	<5
	04/17/89	3	<5	<5	4,800	<5	<10	<5
	05/17/89	3	<50	<50	7,200	<50	<300	<50
	07/27/89	4	<62.5	<62.5	1,390	<62.5	<62.5	<62.5
	10/31/89	5	<5	<5	195	<5	<5	<5
	01/25/90	6	<12.5	<12.5	126	<12.5	<12.5	<12.5
	04/17/90	7	<5.0	<5.0	7.8	<5.0	<5.0	<5.0
	07/17/89	8	<0.5	<0.5	3.0	<0.5	<0.5	<0.5
	10/18/90	9	<0.5	<0.5	1.0	<0.5	<0.5	<0.5
	01/29/91	10	<0.5	<0.5	1.8	<0.5	<0.5	<0.5
	04/23/91	11	<0.5	<0.5	1.0	<0.5	<0.5	<0.5
MW-5	10/31/90	5	<5	<5	<5	<5	<5	<5
	01/25/90	6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	04/17/90	7	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
	07/19/90	8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	10/18/90	9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	01/29/91	10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	04/23/91	11	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
MW-6	10/31/90	5	<5	<5	<5	<5	<5	<5
	01/31/90	6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	04/17/90	7	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
	07/19/90	8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	10/18/90	9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	01/29/91	10	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	04/23/91	11	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

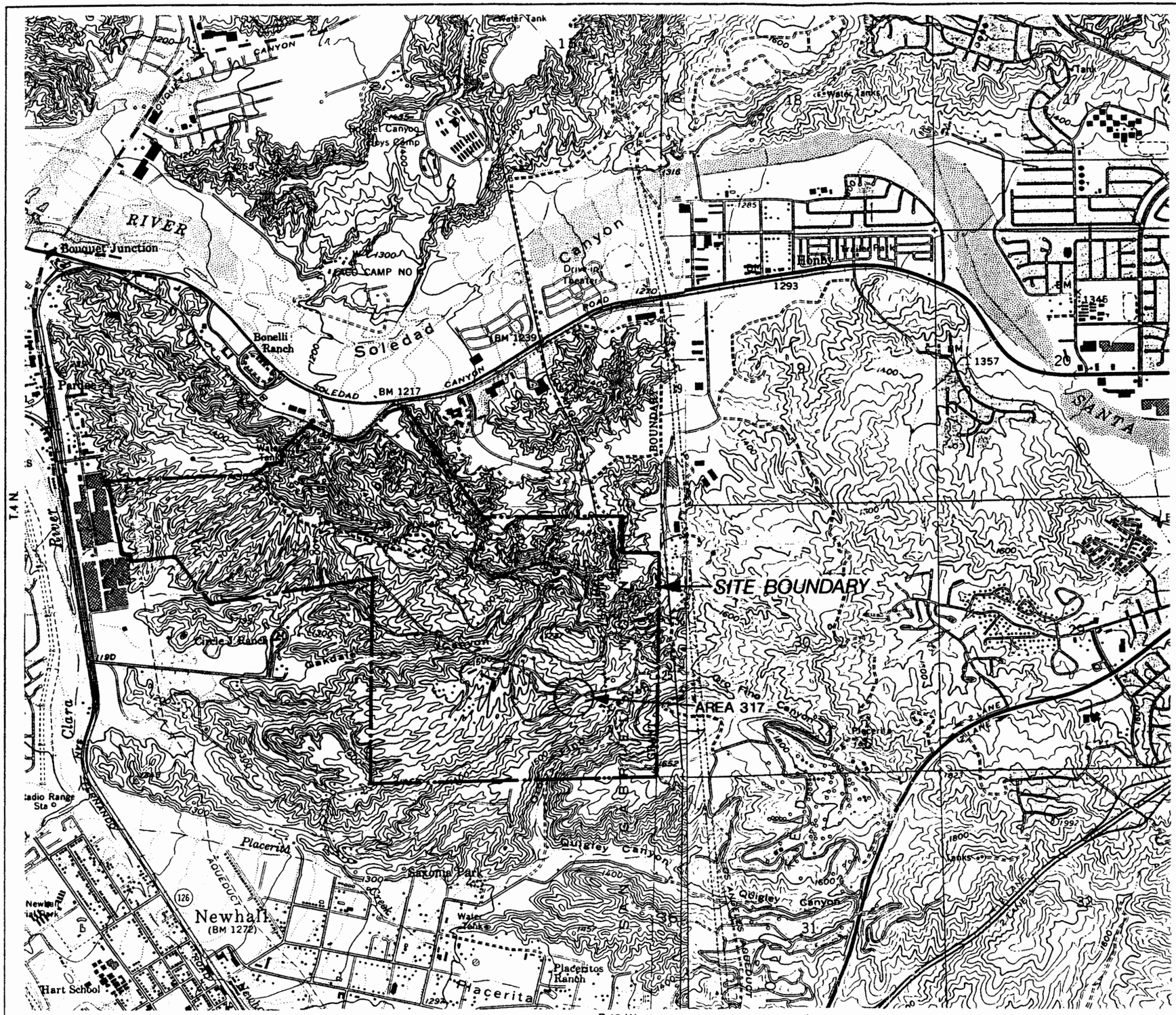
[a]Suggested No-Adverse-Response Level.
[b]No suggest level.
[c]Samples collected prior to implementation quarterly sampling programs.
[d]Compound not detected.

TABLE 13

TCE/TOX Concentration in Monitoring Well MW-4
Concentrations in micrograms per liter (ug/l)

Monitoring Well	Date	Quarter	Trichloro-ethene	TOX (2)[a]
MW-4	06/15/88	(1)[b]	<5	
	07/29/88	(1)[b]	<5	
	08/15/88	(1)[b]	<5	
	10/04/88	1	<5	85
	11/03/88	1		<100
	01/25/89	2	<5	<100
	04/17/89	3	4,800	3,630
	05/17/89	3	7,200	
	07/27/89	4	1,390	858
	10/31/89	5	195	128
	01/25/90	6	126	99
	04/17/90	7	7.8	<20
	07/17/90	8	3.0	<20
	10/18/90	9	1.0	<100
	01/29/91	10	1.8	5

[a]The mean of the replicate samples is reported.
[b]Samples collected before quarterly sampling.



North

GENERAL NOTES:

BASE MAP FROM U.S.G.S.
MINT CANYON & NEWHALL, CA.
7.5 MINUTE TOPOGRAPHIC
PHOTOREVISED 1988

QUADRANGLE LOCATION

0 2000 FT

SCALE 1 : 24,000

FIGURE 1
SITE LOCATION MAP
BERMITE
22116 WEST SOLEDAD CANYON ROAD
SANTA CLARITA, CA.

PROJECT NO. 40-90-038	DRAWN BY I.H. 9/17/90
FILE NO. —	PREPARED BY
REVISION NO. 1	REVIEWED BY MSO 9/19/90

Delta Environmental Consultants, Inc.

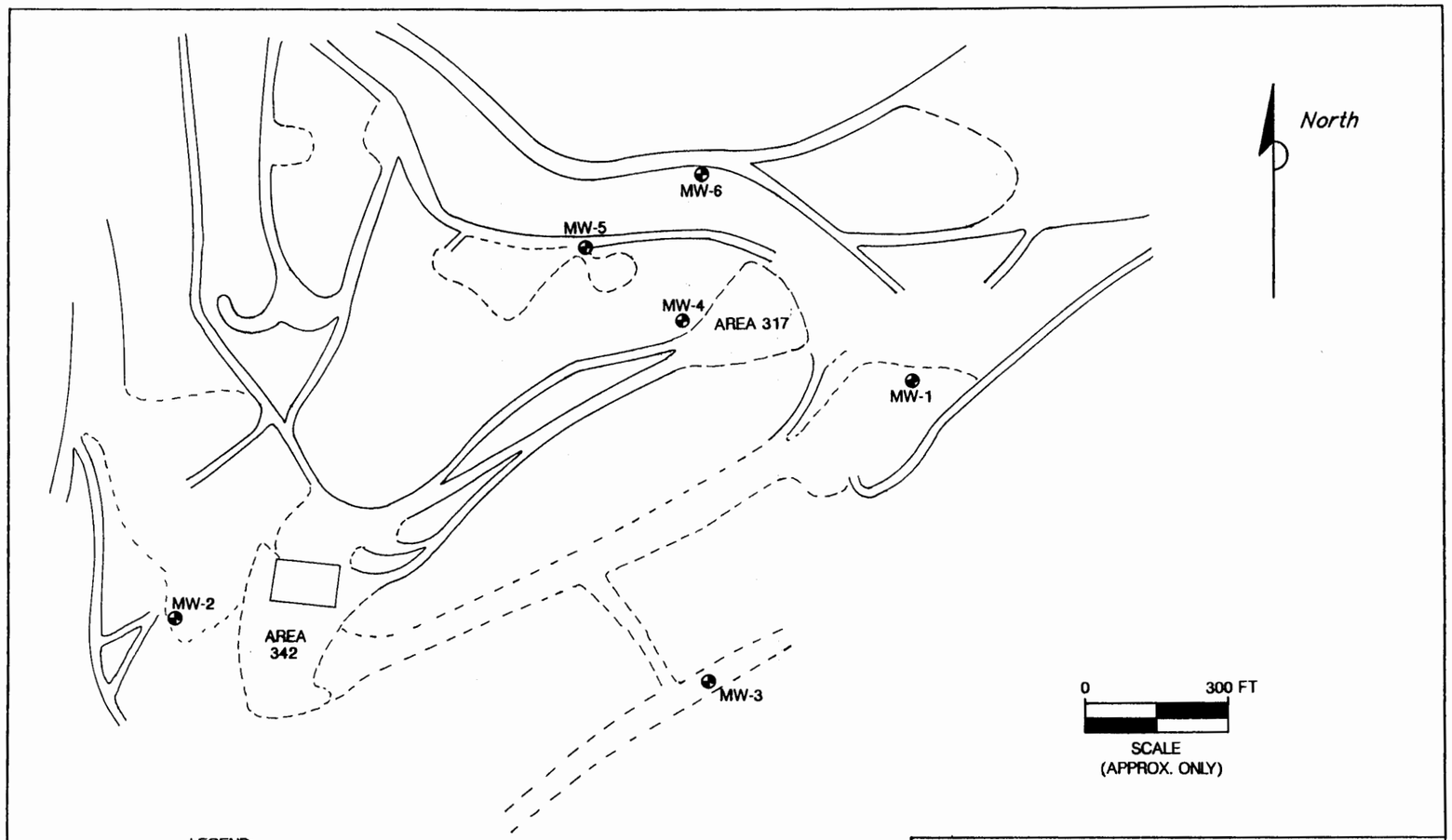


FIGURE 2

RCRA MONITORING WELL LOCATION MAP

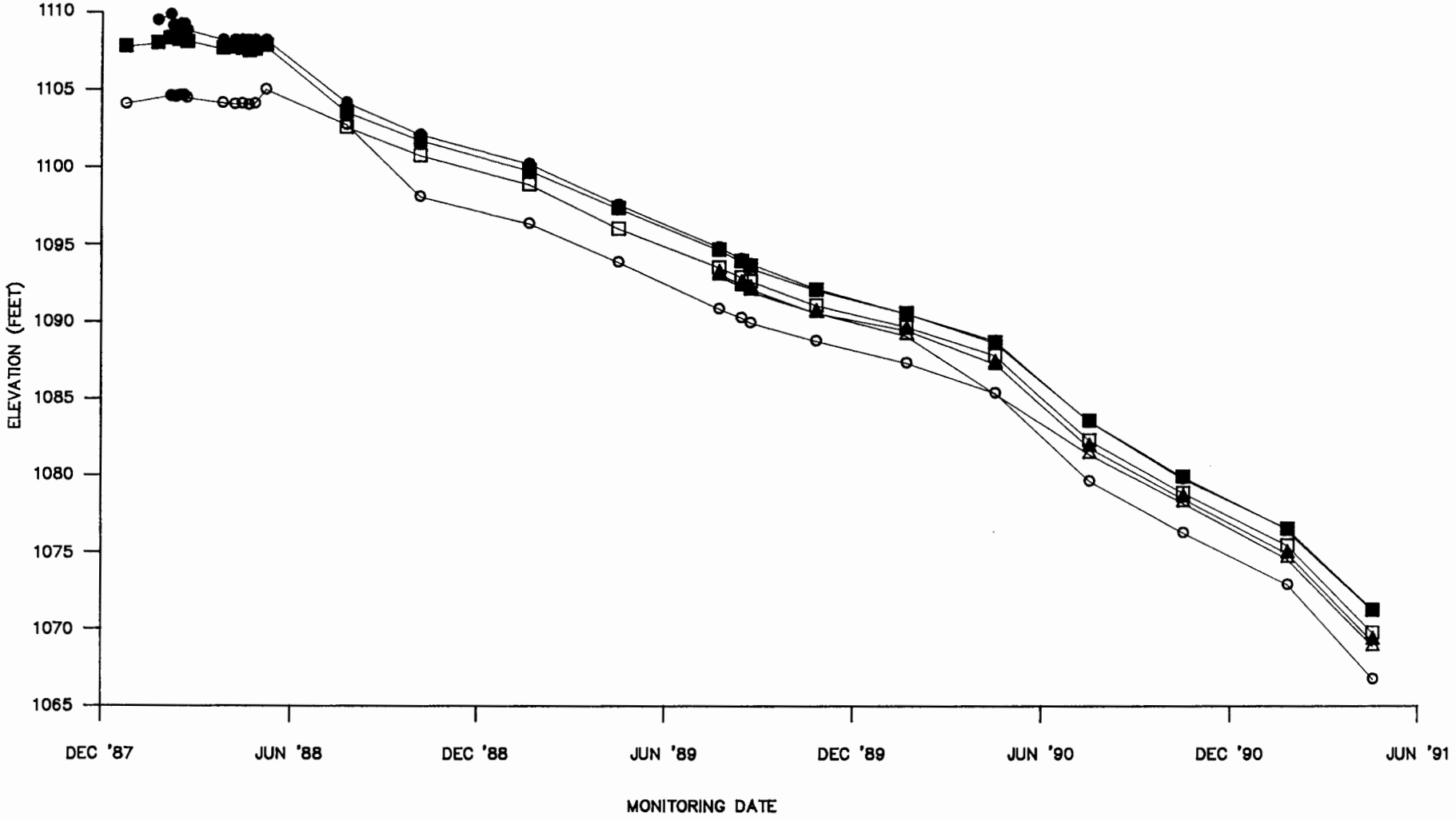
BERMITE

22116 WEST SOLEDAD CANYON ROAD

SANTA CLARITA, CA.

PROJECT NO. 40-90-038	DRAWN BY I.H. 9/26/90
FILE NO. ____	PREPARED BY LER
REVISION NO. 1	REVIEWED BY

Delta Environmental Consultants, Inc.



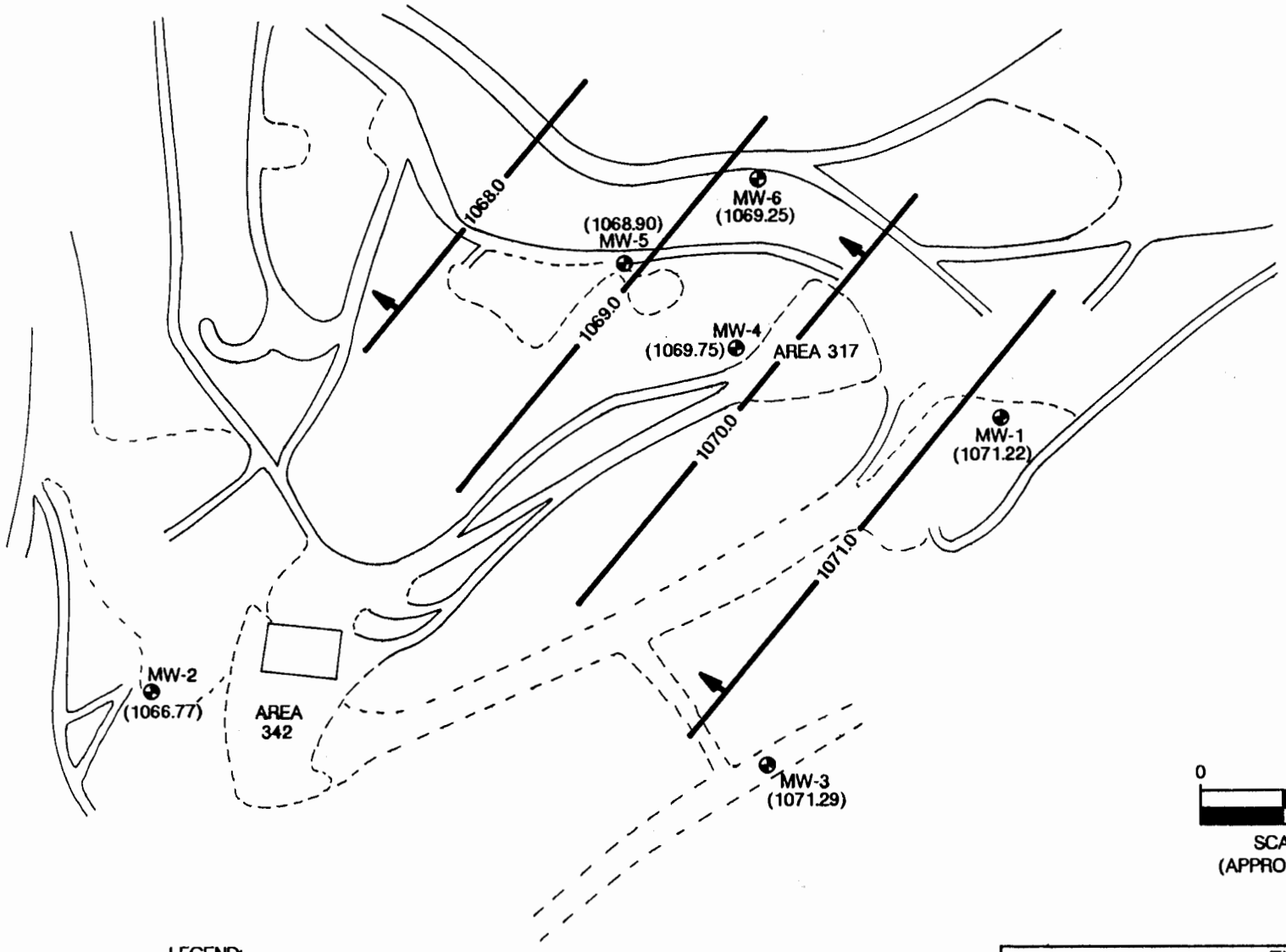
LEGEND:

- MW-1
- MW-2
- MW-3
- MW-4
- MW-5
- MW-6

FIGURE 3
RCRA GROUND WATER MONITORING WELLS
POTENTIOMETRIC SURFACE ELEVATIONS
BERMITE
22116 WEST SOLEDAD CANYON ROAD
SANTA CLARITA, CA.

PROJECT NO. 40-90-038	DRAWN BY I.H. 7/17/91
FILE NO. 90-038-8	PREPARED BY JRB
REVISION NO. 2	REVIEWED BY JRB 7/18/91

Delta Environmental Consultants, Inc.



LEGEND:

- MW-1 — MONITORING WELL LOCATION
- (1071.22) — GROUND WATER ELEVATION IN FEET IN TERMS OF NATIONAL GEODETIC VERTICAL DATUM
- 1070.0 — WATER TABLE CONTOUR IN FEET IN TERMS OF NATIONAL GEODETIC VERTICAL DATUM
- GROUND WATER FLOW DIRECTION

FIGURE 4

GROUND WATER FLOW DIRECTION - 4/22/91

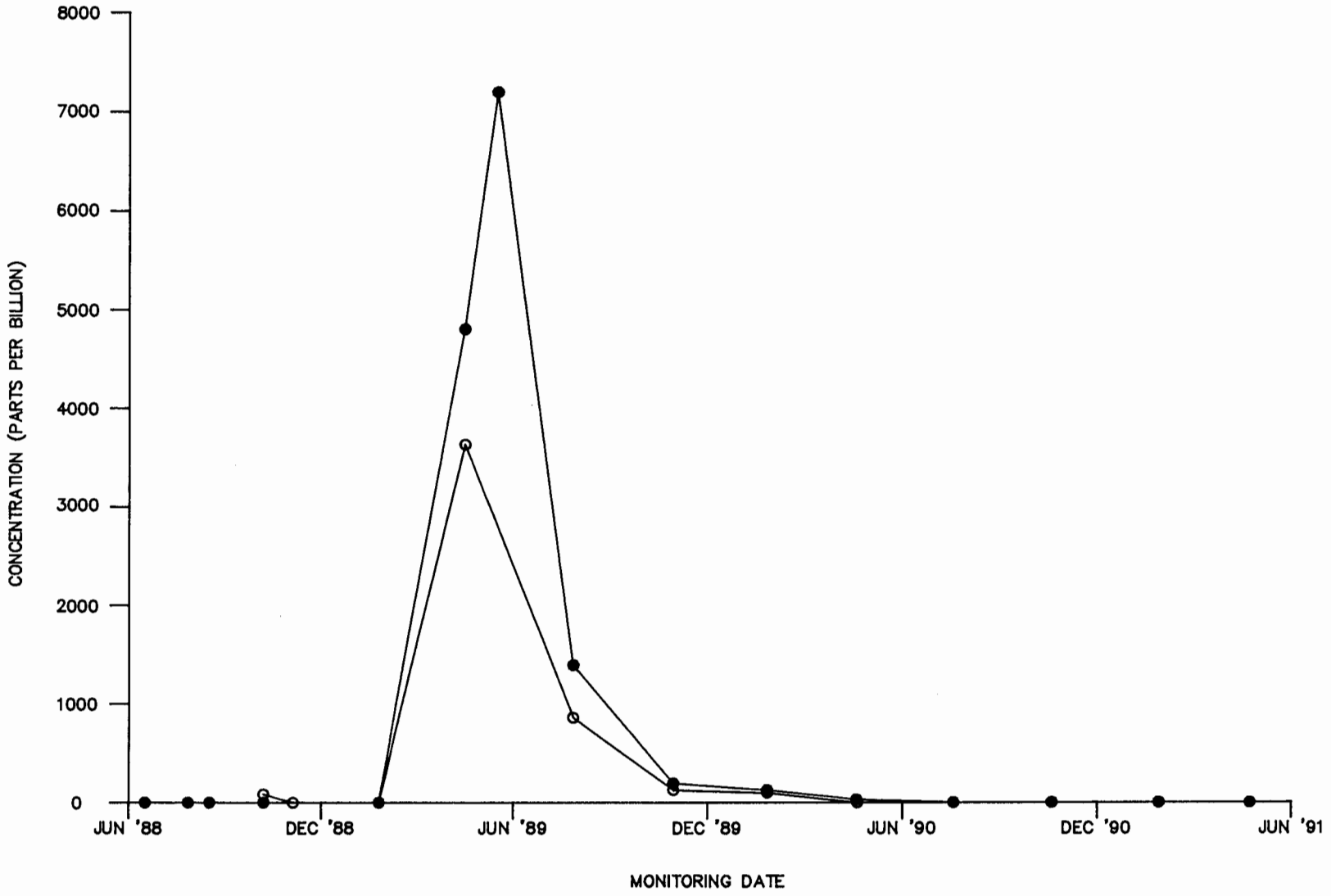
BERMITE

22116 WEST SOLEDAD CANYON ROAD

SANTA CLARITA, CA.

PROJECT NO. 40-90-038	DRAWN BY L.H. 7/17/91
FILE NO. —	PREPARED BY JRB
REVISION NO. 1	REVIEWED BY JRB 7/18/91

Delta Environmental Consultants, Inc.



LEGEND:

TCE

TOX

FIGURE 5
TCE/TOX CONCENTRATION HISTORY
MONITORING WELL 4
BERMITE
22116 WEST SOLEDAD CANYON ROAD
SANTA CLARITA, CA.

PROJECT NO. 40-90-038	DRAWN BY I.H. 7/17/91
FILE NO. 90-038-9	PREPARED BY JRB
REVISION NO. 2	REVIEWED BY JRB 7/18/91

Delta Environmental Consultants, Inc.

APPENDIX A

Sample Container Certificates of Analysis

CHEM *Chemists in the Container Business™*

I-CHEM RESEARCH

CERTIFICATE OF ANALYSIS

Analysis of Lot 0193013 July 20, 1990

Lot 0193013 has been cleaned to I-CHEM's Protocol A. Randomly selected samples from this lot were analyzed using ICP/Mass Spectroscopy, ICP/Atomic Emission Spectroscopy, Furnace Atomic Absorption, and Cold Vapor Atomic Absorption. The following analytical results were obtained.

Element	Concentration (ug/L)	Element	Concentration (ug/L)	Element	Concentration (ug/L)
Aluminum	< 80	Antimony	< 5	Arsenic	< 5
Barium	< 20	Beryllium	< 0.5	Cadmium	< 1
Chromium	< 10	Cobalt	< 10	Copper	< 10
Iron	< 50	Lead	< 2	Manganese	< 10
Mercury	< 0.2	Nickel	< 20	Selenium	< 2
Silver	< 5	Thallium	< 5	Vanadium	< 10
Zinc	< 10				

Selected samples from this lot were also analyzed for semivolatiles by GC/Mass Spectroscopy. The following analytical results were obtained.

Compound	Concentration (ug/L)	Compound	Concentration (ug/L)	Compound	Concentration (ug/L)
Acenaphtene	< 5	Acenaphthylene	< 5	Anthracene	< 5
Benzo(a)anthracene	< 5	Benzo(a)pyrene	< 5	Benzo(b)fluoranthene	< 5
Benzo(k)fluoranthene	< 5	Benzo(g,h,i)perylene	< 5	Benzoic Acid	< 20
Benzyl alcohol	< 5	4-Bromophenyl-phenylether	< 5	Butylbenzylphthalate	< 5
Di-n-butylphalate	< 5	4-Chloroaniline	< 5	4-Chloro-3-methylphenol	< 5
bis-(2-Chloroethoxy)methane	< 5	bis-(2-Chloroethyl)ether	< 5	Azobenzene	< 5
2-Chloronaphthalene	< 5	2-Chlorophenol	< 5	4-Chlorophenyl-phenylether	< 5
Chrysene	< 5	Dibenzo(a,h)anthracene	< 5	Dibenzofuran	< 5
1,4-Dichlorobenzene	< 5	3,3'-Dichlorobenzidine	< 5	2,4-Dichlorophenol	< 5
Diethylphthalate	< 5	2,4-Dimethylphenol	< 5	Dimethylphthalate	< 5
4,6-Dinitro-2-methylphenol	< 20	2,4-Dinitrophenol	< 20	2,4-Dinitrotoluene	< 5
2,6-Dinitrotoluene	< 5	bis-(2-Ethlhexyl)phthalate	< 5	Fluroanthene	< 5
Fluorene	< 5	Hexachlorobenzene	< 5	Hexachlorobutadiene	< 5
Hexachlorocyclopentadiene	< 5	Hexachloroethane	< 5	Indeno(1,2,3-cd)pyrene	< 5
Isophorone	< 5	2-Methylnaphthalene	< 5	2-Methyphenol	< 5
4-Methyphenol	< 5	Naphthalene	< 5	2-Nitroaniline	< 20
3-Nitroaniline	< 20	4-Nitroaniline	< 20	Nitrobenzene	< 5
2-Nitrophenol	< 5	4-Nitrophenol	< 20	N-Nitrosodiphenylamine	< 5
N-Nitroso-di-n-dipropylamine	< 5	Di-n-octylphthalate	< 5	Pentachlorophenol	< 20
Phenanthrene	< 5	Phenol	< 5	Pyrene	< 5
1,2,4-Trichlorobenzene	< 5	2,4,5-Trichlorophenol	< 20	2,4,6-Trichlorophenol	< 5
1,2-Dichlorobenzene	< 5	1,3-Dichlorobenzene	< 5	Bis(2chloroisopropyl)ether	< 5
N-nitrosodimethylamine	< 5				

Contact our Technical Service Department if additional information is required.

Please keep this certificate for your records and to facilitate any necessary correspondence regarding this lot.

Randy E. Benson
Laboratory Manager

I-CHEM *Chemists in the Container Business™*

I-CHEM RESEARCH

CERTIFICATE OF ANALYSIS

Analysis of Lot 0346013 December 14, 1990

Lot 0346013 has been cleaned to I-CHEM's Protocol C. Randomly selected samples from this lot were analyzed using ICP/Mass Spectroscopy, ICP/Atomic Emission Spectroscopy, Furnace Atomic Absorption, Flame Atomic Absorption, and Cold Vapor Atomic Absorption. The following analytical results were obtained.

Element/Compound	Concentration (ug/L)
Aluminum	< 80
Antimony	< 5
Arsenic	< 5
Barium	< 20
Beryllium	< 0.5
Calcium	< 100
Cadmium	< 1
Chromium	< 10
Cobalt	< 10
Copper	< 10
Iron	< 50
Lead	< 2
Magnesium	< 100
Manganese	< 10
Mercury	< 0.2
Nickel	< 20
Potassium	< 100
Selenium	< 2
Silver	< 5
Sodium	< 100
Thallium	< 5
Vanadium	< 10
Zinc	< 10
Cyanide	< 10

Contact our Technical Service Department if additional information is required.

Please keep this certificate for your records and to facilitate any necessary correspondence regarding this lot.

Randy E. Benson
Laboratory Manager

Certificate of Analysis

Bottle Type & QA Level: Z Level 1

Description : 250 mL. Amber B.R.

Lot No.: Z1010010 Date: 1-17-91

BASE/NEUTRAL/ACID EXTRACTABLES QUALITY CONTROL ANALYSIS

This is to certify that this lot was tested and found to comply with Eagle-Picher Environmental Services specifications for this product.

Compound Analyzed	Quantity Found (ng/bottle)
Phenol	<1.
Bis(2-Chlorethyl)ether	<1.
2-Chlorophenol	<1.
1,3-Dichlorobenzene	<1.
1,4-Dichlorobenzene	<1.
Benzyl Alcohol	<1.
2-Methylphenol	<1.
Bis(2-Chloroisopropyl)ether	<1.
4-Methylphenol	<1.
N-Nitroso-di-n-propylamine	<1.
Hexachloroethane	<1.
Nitrobenzene	<1.
Isophorone	<1.
2-Nitrophenol	<1.
2,4-Dimethylphenol	<1.
Benzoic Acid	<1.
Bis(2-Chloroethoxy)methane	<1.
2,4-Dichlorophenol	<1.
1,2,4-Trichlorobenzene	<1.
Naphthalene	<1.
4-Chloroaniline	<1.
Hexachlorobutadiene	<1.
4-Chloro-3-methylphenol (para-chloro-meta-cresol)	<1.
2-Methylnaphthalene	<1.
Hexachlorocyclopentadiene	<1.
2,4,6-Trichlorophenol	<1.
2,4,5-Trichlorophenol	<1.
2-Chloronaphthalene	<1.
2-Nitroaniline	<1.
Dimethylphthalate	<1.
Acenaphthylene	<1.

NOTE: ppb = $\frac{\text{Quantity (in nanograms)}}{\text{Container volume (in mL)}}$

Approved: Jul Shepherd

Date 1-17-91

EAGLE PICHER

ENVIRONMENTAL SERVICES

36 B. J. TUNNELL BLVD. EAST • MIAMI, OKLAHOMA 74354-3300 • (800) 331-7425

Certificate of Analysis

Bottle Type & QA Level: Z Level 1

Description : 250 mL. Amber B.R.

Lot No.: Z1010010 Date: 1-17-91

PESTICIDE EXTRACTABLES QUALITY CONTROL ANALYSIS

This is to certify that this lot was tested and found to comply with Eagle-Picher Environmental Services specifications for this product.

Compound Analyzed	Quantity Found (ng/bottle)
alpha-BHC	<.03
gamma-BHC (Lindane)	<.03
beta-BHC	<.03
Heptachlor	<.03
delta-BHC	<.03
Aldrin	<.03
Heptachlor epoxide	<.03
Endosulfan I	<.03
4,4'-DDE	<.06
Dieldrin	<.06
Endrin	<.06
4,4'-DDD	<.06
Endosulfan II	<.06
4,4'-DDT	<.06
Endosulfan sulfate	<.06
Methoxychlor	<.30
Endrin Ketone	<.06
Chlordane (tech)	<.30
Toxaphene	<.30
Arochlor-1016	<.30
Arochlor-1221	<.30
Arochlor-1232	<.30
Arochlor-1242	<.30
Arochlor-1248	<.30
Arochlor-1254	<.60
Arochlor-1260	<.60

NOTE: ppb = $\frac{\text{Quantity (in nanograms)}}{\text{Container volume (in mL)}}$

Approved: Paul L. Shepherd

Date : 1-17-91

EAGLE EP PICHER
ENVIRONMENTAL SERVICES
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Certificate of Analysis

Bottle Type & QA Level: 2 Level 1

Description : 250 mL. Amber B.R.

Lot No.: Z1010010 Date: 1-17-91

BASE/NEUTRAL/ACID EXTRACTABLES QUALITY CONTROL ANALYSIS

This is to certify that this lot was tested and found to comply with Eagle-Picher Environmental Services specifications for this product.

Compound Analyzed	Quantity Found (ng/bottle)
Phenol	<1.
Bis(2-Chlorethyl)ether	<1.
2-Chlorophenol	<1.
1,3-Dichlorobenzene	<1.
1,4-Dichlorobenzene	<1.
Benzyl Alcohol	<1.
2-Methylphenol	<1.
Bis(2-Chloroisopropyl)ether	<1.
4-Methylphenol	<1.
N-Nitroso-di-n-propylamine	<1.
Hexachloroethane	<1.
Nitrobenzene	<1.
Isophorone	<1.
2-Nitrophenol	<1.
2,4-Dimethylphenol	<1.
Benzoic Acid	<1.
Bis(2-Chloroethoxy)methane	<1.
2,4-Dichlorophenol	<1.
1,2,4-Trichlorobenzene	<1.
Naphthalene	<1.
4-Chloroaniline	<1.
Hexachlorobutadiene	<1.
4-Chloro-3-methylphenol (para-chloro-meta-cresol)	<1.
2-Methylnaphthalene	<1.
Hexachlorocyclopentadiene	<1.
2,4,6-Trichlorophenol	<1.
2,4,5-Trichlorophenol	<1.
2-Chloronaphthalene	<1.
2-Nitroaniline	<1.
Dimethylphthalate	<1.
Acenaphthylene	<1.

NOTE: ppb = $\frac{\text{Quantity (in nanograms)}}{\text{Container volume (in mL)}}$

Approved: Jul Shepherd

Date 1-17-91

EAGLE PICHER
ENVIRONMENTAL SERVICES
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Certificate of Analysis

Bottle Type & QA Level: Z Level 1

Description : 250 mL. Amber B.R.

Lot No.: Z1010010 Date: 1-17-91

BASE/NEUTRAL/ACID EXTRACTABLES QUALITY CONTROL ANALYSIS PAGE 2

This is to certify that this lot was tested and found to comply with Eagle-Picher Environmental Services specifications for this product.

Compound Analyzed	Quantity Found (ng/bottle)
2,6-Dinitrotoluene	<1.
3-Nitroaniline	<1.
Acenaphthene	<1.
2,4-Dinitrophenol	<1.
4-Nitrophenol	<1.
Dibenzofuran	<1.
2,4-Dinitrotoluene	<1.
Diethylphthalate	<1.
4-Chlorophenyl-phenyl ether	<1.
Fluorene	<1.
4-Nitroaniline	<1.
4,6-Dinitro-2-methylphenol	<1.
4-Bromophenyl-phenyl ether	<1.
Hexachlorobenzene	<1.
Pentachlorophenol	<1.
Phenanthrene	<1.
Anthracene	<1.
Di-N-Butylphthalate	<1.
Fluoranthene	<1.
Pyrene	<1.
Butylbenzylphthalate	<1.
3,3'-Dichlorobenzidine	<1.
Benzo(a)anthracene	<1.
Chrysene	<1.
Bis(2-ethylhexyl)phthalate	<1.
Di-n-Octylphthalate	<1.
Benzo(b)fluoranthene	<1.
Benzo(k)fluoranthene	<1.
Benzo(a)pyrene	<1.
Indeno(1,2,3-cd)pyrene	<1.
Dibenzo(a,h)anthracene	<1.
Benzo(g,h,i)perylene	<1.

NOTE: ppb = $\frac{\text{Quantity (in nanograms)}}{\text{Container volume (in mL)}}$

Approved: Paul Shepherd

Date : 1-17-91

EAGLE PICHER
ENVIRONMENTAL SERVICES
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Certificate of Analysis

Bottle Type & QA Level: 2 Level 1

Description : 250 mL. Amber B.R.

Lot No.: Z1010010 Date: 1-17-91

BASE/NEUTRAL/ACID EXTRACTABLES QUALITY CONTROL ANALYSIS

This is to certify that this lot was tested and found to comply with Eagle-Picher Environmental Services specifications for this product.

Compound Analyzed	Quantity Found (ng/bottle)
Phenol	<1.
Bis(2-Chlorethyl)ether	<1.
2-Chlorophenol	<1.
1,3-Dichlorobenzene	<1.
1,4-Dichlorobenzene	<1.
Benzyl Alcohol	<1.
2-Methylphenol	<1.
Bis(2-Chloroisopropyl)ether	<1.
4-Methylphenol	<1.
N-Nitroso-di-n-propylamine	<1.
Hexachloroethane	<1.
Nitrobenzene	<1.
Isophorone	<1.
2-Nitrophenol	<1.
2,4-Dimethylphenol	<1.
Benzoic Acid	<1.
Bis(2-Chloroethoxy)methane	<1.
2,4-Dichlorophenol	<1.
1,2,4-Trichlorobenzene	<1.
Naphthalene	<1.
4-Chloroaniline	<1.
Hexachlorobutadiene	<1.
4-Chloro-3-methylphenol (para-chloro-meta-cresol)	<1.
2-Methylnaphthalene	<1.
Hexachlorocyclopentadiene	<1.
2,4,6-Trichlorophenol	<1.
2,4,5-Trichlorophenol	<1.
2-Chloronaphthalene	<1.
2-Nitroaniline	<1.
Dimethylphthalate	<1.
Acenaphthylene	<1.

NOTE: ppb = $\frac{\text{Quantity (in nanograms)}}{\text{Container volume (in mL)}}$

Approved: Jul Shepherd

Date : 1-17-91

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ENVIRONMENTAL SERVICES
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Certificate of Analysis

Bottle Type & QA Level: Z Level 1

Description : 250 mL. Amber B.R.

Lot No.: Z1010010 Date: 1-17-91

PESTICIDE EXTRACTABLES QUALITY CONTROL ANALYSIS

This is to certify that this lot was tested and found to comply with Eagle-Picher Environmental Services specifications for this product.

Compound Analyzed	Quantity Found (ng/bottle)
alpha-BHC	<.03
gamma-BHC (Lindane)	<.03
beta-BHC	<.03
Heptachlor	<.03
delta-BHC	<.03
Aldrin	<.03
Heptachlor epoxide	<.03
Endosulfan I	<.03
4,4'-DDE	<.06
Dieldrin	<.06
Endrin	<.06
4,4'-DDD	<.06
Endosulfan II	<.06
4,4'-DDT	<.06
Endosulfan sulfate	<.06
Methoxychlor	<.30
Endrin Ketone	<.06
Chlordane (tech)	<.30
Toxaphene	<.30
Arochlor-1016	<.30
Arochlor-1221	<.30
Arochlor-1232	<.30
Arochlor-1242	<.30
Arochlor-1248	<.30
Arochlor-1254	<.60
Arochlor-1260	<.60

NOTE: ppb = Quantity (in nanograms) / Container volume (in mL)

Approved: Jack L. Shepherd

Date : 1-17-91

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Certificate of Analysis

Bottle Type & QA Level: Z Level 1

Description : 250 mL. Amber B.R.

Lot No.: Z1010010 Date: 1-17-91

BASE/NEUTRAL/ACID EXTRACTABLES QUALITY CONTROL ANALYSIS

This is to certify that this lot was tested and found to comply with Eagle-Picher Environmental Services specifications for this product.

Compound Analyzed	Quantity Found (ng/bottle)
Phenol	<1.
Bis(2-Chlorethyl)ether	<1.
2-Chlorophenol	<1.
1,3-Dichlorobenzene	<1.
1,4-Dichlorobenzene	<1.
Benzyl Alcohol	<1.
2-Methylphenol	<1.
Bis(2-Chloroisopropyl)ether	<1.
4-Methylphenol	<1.
N-Nitroso-di-n-propylamine	<1.
Hexachloroethane	<1.
Nitrobenzene	<1.
Isophorone	<1.
2-Nitrophenol	<1.
2,4-Dimethylphenol	<1.
Benzoic Acid	<1.
Bis(2-Chloroethoxy)methane	<1.
2,4-Dichlorophenol	<1.
1,2,4-Trichlorobenzene	<1.
Naphthalene	<1.
4-Chloroaniline	<1.
Hexachlorobutadiene	<1.
4-Chloro-3-methylphenol (para-chloro-meta-cresol)	<1.
2-Methylnaphthalene	<1.
Hexachlorocyclopentadiene	<1.
2,4,6-Trichlorophenol	<1.
2,4,5-Trichlorophenol	<1.
2-Chloronaphthalene	<1.
2-Nitroaniline	<1.
Dimethylphthalate	<1.
Acenaphthylene	<1.

NOTE: ppb = $\frac{\text{Quantity (in nanograms)}}{\text{Container volume (in mL)}}$

Approved: Jul. Shepherd

Date 1-17-91

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Certificate of Analysis

Bottle Type & QA Level: Z Level 1

Description : 250 mL. Amber B.R.

Lot No.: Z1010010 Date: 1-17-91

BASE/NEUTRAL/ACID EXTRACTABLES QUALITY CONTROL ANALYSIS PAGE 2

This is to certify that this lot was tested and found to comply with Eagle-Picher Environmental Services specifications for this product.

Compound Analyzed	Quantity found (ng/bottle)
2,6-Dinitrotoluene	<1.
3-Nitroaniline	<1.
Acenaphthene	<1.
2,4-Dinitrophenol	<1.
4-Nitrophenol	<1.
Dibenzofuran	<1.
2,4-Dinitrotoluene	<1.
Diethylphthalate	<1.
4-Chlorophenyl-phenyl ether	<1.
Fluorene	<1.
4-Nitroaniline	<1.
4,6-Dinitro-2-methylphenol	<1.
4-Bromophenyl-phenyl ether	<1.
Hexachlorobenzene	<1.
Pentachlorophenol	<1.
Phenanthrene	<1.
Anthracene	<1.
Di-N-Butylphthalate	<1.
Fluoranthene	<1.
Pyrene	<1.
Butylbenzylphthalate	<1.
3,3'-Dichlorobenzidine	<1.
Benzo(a)anthracene	<1.
Chrysene	<1.
Bis(2-ethylhexyl)phthalate	<1.
Di-n-Octylphthalate	<1.
Benzo(b)fluoranthene	<1.
Benzo(k)fluoranthene	<1.
Benzo(a)pyrene	<1.
Indeno(1,2,3-cd)pyrene	<1.
Dibenzo(a,h)anthracene	<1.
Benzo(g,h,i)perylene	<1.

NOTE: ppb = $\frac{\text{Quantity (in nanograms)}}{\text{Container volume (in mL)}}$

Approved: Jul. Shepherd

Date 1-17-91

EAGLE EP PICHER
ENVIRONMENTAL SERVICES
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Certificate of Analysis

Bottle Type & QA Level: L Level 1

Description : 500 mL. HDPE White

Lot No.: L1003020 Date: 1-7-91

METALS QUALITY CONTROL ANALYSIS

This is to certify that this lot was tested and found to comply with Eagle-Picher Environmental Services specifications for this product.

Compound Analyzed	Quantity Found (ug/L)
Silver	< 10
Aluminum	<100
Arsenic	< 2.0
Barium	< 20
Beryllium	< 1.0
Calcium	<500
Cadmium	< 1
Cobalt	< 10
Chromium	< 10
Copper	< 10
Iron	<500
Mercury	< 0.2
Potassium	<750
Magnesium	<500
Manganese	< 10
Sodium (Polyethylene)	<500
Nickel	< 20
Lead	< 2
Antimony	< 5
Selenium	< 3
Thallium	< 10
Vanadium	< 10
Zinc	< 20
Cyanide	< 10
Fluoride	<200

Approved: Jul Shepherd

Date : 1-7-91

EAGLE PICHER
ENVIRONMENTAL SERVICES
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APPENDIX B

Field Log

RCRA GROUNDWATER SAMPLING EVENT NO. 11

4-22-91 GLENARDUN-NUR, TIM ERICKER

SUNNY 72°

0900 - STARTING UP THE HILL TO MEASURE WELL DEPTHS.

0910 - MEASURING WELL DEPTH AT MW-4. NO PROBLEMS

0924 - MEASURING WELL DEPTH AT MW-5. TAPE STICKING A LITTLE.

0945 - MEASURING WELL DEPTH AT MW6 - NO PROBLEMS

1000 - MEASURING WELL DEPTH AT MW-1. NO PROBLEMS

1016 - MEASURING WELL DEPTH AT MW-3. NO PROBLEMS

930 MEASURING WELL DEPTHS AT MW-2. NO PROBLEMS

1045 - TURNING ON ALL WELLS TO BEGIN STABILIZATION.

1110 - ALL WELLS TURNED ON AND PUMPING.

DEPTH TO WATER MEASURMENTS

WELL	TOC	DEPTH TO WATER	ELEVATION
MW-1	1561.32	490.100	1071.22~~1088.660~~
MW-2	1424.17	357.400	1066.77~~1085.395~~
MW-3	1538.51	467.220	1071.29~~1088.775~~
MW-4	1538.43	468.680	1069.75~~1087.830~~
MW-5	1493.37	424.475	1068.895~~1087.230~~
MW-6	1521.09	451.845	1069.245~~1087.320~~

1325- GOING UP THE HILL TO TAKE THE FIRST SET OF STABILIZATION READINGS.

WELL	TIME	DATE	TEMP	pH	COND.
MW-1	1435	4-22	22.6	6.65	360
MW-2	1448	4-22	21.8	6.15	2570
MW-3	1419	4-22	23.0	6.50	430
MW-4	1405	4-22	22.5	6.75	370
MW-5	1333	4-22	22.9	6.80	370
MW-6	1350	4-22	23.6	6.50	360

1500- 1ST. SET OF STABILIZATION READINGS COMPLETE.

4-23-91 GLEN ABDUNNUR TIM BRICKER

64° COOL CLEAR SKY

0600- GOING UP THE HILL FOR 2ND. SET OF STABILIZATION READINGS.

WELL	TIME	DATE	TEMP	pH	COND
MW-1	0714	4-23	22.0	6.70	380
MW-2	0730	4-23	21.5	6.25	2590
MW-3	0700	4-23	23.0	6.75	430
MW-4	0644	4-23	21.8	6.75	370
MW-5	0628	4-23	22.4	6.75	380
MW-6	0615	4-23	23.0	6.45	360

0735 - 2ND SET OF STABILIZATION READINGS COMPLETED.

0830 - GOING UP THE HILL TO BEGIN 3RD. SET OF STABILIZATION READINGS.

WELL	TIME	DATE	TEMP	PH	COND
MW-1	0928	4-23	22.5	6.75	380
MW-2	0940	4-23	22.0	6.25	2610
MW-3	0915	4-23	23.5	6.70	430
MW-4	0905	4-23	22.0	6.80	370
MW-5	0952	4-23	22.5	6.82	380
MW-6	0840	4-23	22.5	6.55	360

0945 - 3RD. SET OF STABILIZATION READINGS COMPLETED. TURNING DOWN ALL WELLS TO SAMPLING SPEED.

1000 - BEGINNING SAMPLING AT MW-2

SAMPLE I.D.	# CONT	TYPE	TIME
MW2/A/11/1-4	4	500ML.	1002
MW2/B/11/1-4	4	250ML.	1006
MW2/C/11/1-4	4	250ML.	1010
MW2/1-/11	1	1000ML.	1014
MW2/H/11	1	1000ML.	1000
MW2/I/11	1	500ML.	1001

1020 - SAMPLING COMPLETED AT MW-2. WELL TURNED OFF AND SECURED.

1030- BEGINNING SAMPLING AT MW-6.

SAMPLE ID.	#CONT	TYPE	TIME
MW6/A/11/1-4	4	500ML.	1030
MW6/B/11/1-4	4	250ML.	1037
MW6/C/11/1-4	4	250ML.	1041
MW6/O/11	3	40ML.	1034

1045- FILLING AND LABELING FIELD BLANK SAMPLES.

SAMPLE ID.	#CONT	TYPE	TIME
MW6/O/11/1A	3	40ML.	1045
MW6/B/11/1A	1	250ML.	1047
MW6/C/11/1A	1	250ML.	1046

1055- SAMPLING COMPLETED AT MW-6. WELL TURNED OFF AND SECURED.

1100- BEGINNING SAMPLING AT MW-5.

SAMPLE ID	#CONT	TYPE	TIME
MW5/O/11	3	40ML.	1104
MW5/A/11/1-4	4	500ML.	1100
MW5/B/11/1-4	4	250ML.	1107
MW5/C/11/1-4	4	250ML.	1111

1115- LABELING TRIP BLANK SAMPLES

SAMPLE ID.	#CONT	TYPE	TIME
MW5/O/11/1A	2	40ML.	1115
MW5/B/11/1A	1	250ML.	1116
MW5/C/11/1A	1	250ML.	1117

1125 - SAMPLING COMPLETED AT MW-5. WELL TURNED OFF AND SECURED.

1130 - BEGINNING SAMPLING AT MW-4

SAMPLE ID	# CONT	TYPE	TIME
MW4/O/11	3	40ML.	1130
MW4/A/11/1-4	4	500ML.	1133
MW4/B/11/1-4	4	250ML.	1137
MW4/C/11/1-4	4	250ML.	1141

1150 - SAMPLING COMPLETED AT MW-4.

1158 - BEGINNING SAMPLING AT MW-1.

SAMPLE ID	# CONT	TYPE	TIME
MW1/A/11/1-4	4	500ML.	1200
MW1/B/11/1-4	4	250ML.	1204
MW1/C/11/1-4	4	250ML.	1208
MW1/K/11	1	1000ML.	1214
MW1/H/11	1	1000ML.	1212
MW1/I/11	1	500ML.	1213

1220 - SAMPLING COMPLETED AT MW-1. WELL TURNED OFF AND SECURED.

1225 - BEGINNING SAMPLING AT MW-3.

SAMPLE ID	# CONT	TYPE	TIME
MW3/A/II/1-4	4	500ML.	1230
MW3/B/II/1-4	4	250ML.	1234
MW3/C/II/1-4	4	250ML.	1238
MW3/K/II	1	1000ML.	1244
MW3/H/II	1	1000ML.	1242
MW3/I/II	1	500ML.	1243

1250 - SAMPLING COMPLETED AT MW-3
WELL TURNED OFF AND SECURED.

1300 - ALL SAMPLES SEALED WITH CHAIN OF CUSTODY SEALS, PLACED IN REFRIGERATOR AND LOCKED.

*NOTE: ALL "B"-TOC SAMPLES WERE PH ADJUSTED TO <2 WITH H_2SO_4.
ALL "C" TOX SAMPLES WERE PH ADJUSTED TO <2 WITH H_2SO_4.
ALL "K" METALS SAMPLES WERE PH ADJUSTED TO <2 WITH HNO_3.
PH METER WAS ADJUSTED/CALIBRATED BETWEEN EACH SAMPLE.

4-24-91 GLEN ABDUN-NUR, TIM BRICKER

66° COOL SUNNY, CLEAR

0800 - LOADING ALL SAMPLES INTO COOLERS, COVERING WITH ICE, PLACE MIN, MAX THERMOMETERS IN COOLERS, SEAL COOLERS.

0900 - CHECKING ALL PAPER WORK, CHAIN OF CUSTODY SHEETS, LAB ANALYSIS SHEETS.

TIM BRICKER TRANSPORTING ALL SAMPLES TO IGL LAB IN SANTA PAULA.

1100 - ALL SAMPLES DROPED OFF AT LAB.

NO PROBLEMS 11TH. QTRL/ GROUND WATER SAMPLING EVENT COMPLETED.

APPENDIX C

Chain-of-Custody Forms

CHAIN OF CUSTODY RECORD

FIELD COORDINATOR: GLEN ABDUN-NUR

PROJECT NAME: BERMITE

PROJ. NO.: 5-61.4

SAMPLERS (Signature):

SAMPLE NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NUMBER OF CONTAINERS	REMARKS
4/B/11	4-23-91	1130		✓	MONITORING WELL 4	3	ANALYSIS TYPE B
4/A/11 -4	"	1133		✓	"	4	" A
4/B/11 -4	"	1137		✓	"	4	" B
4/C/11 -4	"	1141		✓	"	4	" C
5/B/11	"	1104		✓	MONITORING WELL 5	3	" B
5/A/11 -4	"	1108		✓	"	4	" A
5/B/11 -4	"	1107		✓	"	4	" B
5/C/11 -4	"	1111		✓	"	4	" C
6/B/11	"	1034		✓	MONITORING WELL 6	3	" B
6/A/11 -4	"	1030		✓	"	4	" A
6/B/11 -4	"	1037		✓	"	4	" B
6/C/11 -4	"	1041		✓	"	4	" C

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Relinquished by: (Signature)	Date	Time	Received by: (Signature)
	4-24-91	9:50 AM			4/24/91	0953	[illegible] Hollander
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Relinquished by: (Signature)	Date	Time	Received by: (Signature)
Relinquished by: (Signature)	Date	Time	Received for Laboratory by: (Signature)	Date	Time	Remarks	

NO

CHAIN OF CUSTODY RECORD

FIELD COORDINATOR: GLEN ABDUN-NUR

PROJ. NO.: 85-01.4

PROJECT NAME: BERMITE

SAMPLERS (Signature):

STA. NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NUMBER OF CONTAINERS	REMARKS
MW1/K/11	4/23/91	1214		✓	MONITORING WELL 1	1	ANALYSIS TYPE K
MW1/H/11	11	1212		✓	11	1	11 H
MW1/I/11	11	1213		✓	11	1	11 I
MW1/A/11 1-4	11	1206		✓	11	4	11 A
MW1/B/11 1-4	11	1204		✓	11	4	11 B
MW1/C/11 1-4	11	1208		✓	11	4	11 C
MW2/K/11	11	1014		✓	MONITORING WELL 2	1	11 K
MW2/H/11	11	1300		✓	11	1	11 H
MW2/I/11	11	1301		✓	11	1	11 I
MW2/A/11 1-4	11	1002		✓	11	4	11 A
MW2/B/11 1-4	11	1006		✓	11	4	11 B
MW2/C/11 1-4	11	1010		✓	11	4	11 C

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Relinquished by: (Signature)	Date	Time	Received by: (Signature)
	4-24-91	9:50 AM			4/24/91	0953	M. Hernandez
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Relinquished by: (Signature)	Date	Time	Received by: (Signature)
							FGI INC.
Relinquished by: (Signature)	Date	Time	Received for Laboratory by: (Signature)	Date	Time	Remarks	
							Santa Paula, California 9

APPENDIX D

Sample Analysis Request Forms

SAMPLE ANALYSIS REQUEST

Sampling Information

Project No. 85-01.4 Project Name: BERMITE

Sampler Name: GLEN ABDUN-NUR/TIM BRICKER Tele. No. (805)259-2241

Name of Person Receiving Samples: M. Hernandez

Date Samples Received: RECEIVED APR 24 1991

Internal Temperature of Sample Container: 0°C 30°F

Notes on Samples:

		Analysis Required					
		DISSOLVED METALS BY ICP	SULPHATE, CHLORIDE	TOTAL PHOSPHATE	SPECIFIC CONDUCTANCE, PH	TOC	TOX
Sample I.D.	Laboratory I.D.						
MW1/K/11	39500-1	✓					
MW1/H/11	39601-1		✓				
MW1/I/11	39499-1			✓			
MW1/A/11/1-4	39498-1 →-4				✓		
MW1/B/11/1-4	39417-1→4					✓	
MW1/C/11/1-4	39418-1 → 4						✓
MW2/K/11	39500-2	✓					
MW2/H/11	39601-2		✓				
MW2/I/11	39499-2			✓			
MW2/A/11/1-4	39498-5 → -8				✓		
MW2/B/11/1-4	39417-5 →-8					✓	
MW2/C/11/1-4	39418-5 →-8						✓

SAMPLE ANALYSIS REQUEST

Sampling Information

Project No. 85-01.4 Project Name: BERMITE

Sampler Name: GLEN ABDUN-NUR/TIM BRICKER Tele. No. (805) 259-2241

Name of Person Receiving Samples: M. Hernandez

Date Samples Received: RECEIVED APR 24 1991

Internal Temperature of Sample Container: -5°C 25°F

Notes on Samples:

		Analysis Required					
		DISSOLVED METALS BY ICP	SULPHATE/ CHLORIDE	TOTAL PHOSPHATE	SPECIFIC CONDUCTANCE, PH	TOC	TOX
Sample I.D.	Laboratory I.D.						
MW3/K/11	39560-3	✓					
MW3/H/11	39601-3		✓				
MW3/I/11	39499-3			✓			
MW3/A/11/1-4	39498-9 → -12				✓		
MW3/B/11/1-4	39417-9 → -12					✓	
MW3/C/11/1-4	39418-9 → 12						✓

SAMPLE ANALYSIS REQUEST

Sampling Information

Project No. 85-01.4 **Project Name:** BERMITE

Sampler Name: GLENABDUN-NUR/TIM BRICKER **Tele. No.** (805) 257-2241

Name of Person Receiving Samples: M. Hernandez

Date Samples Received: RECEIVED APR 2 4 1991

Internal Temperature of Sample Container: 22°F -5°C

Notes on Samples:

		Analysis Required					
		VOC's 624	SPECIFIC CONDUCTANCE, PH	TOC	TOX		
Sample I.D.	**Laboratory I.D.**						
MW4/0/11	39416-1	✓					
MW4/A/11/1-4	39498-13→16		✓				
MW4/B/11/1-4	39417-13→-16			✓			
MW4/C/11/1-4	39418-13→16				✓		
MW5/0/11	39416-2	✓					
MW5/A/11/1-4	39498-17→-20		✓				
MW5/B/11/1-4	39417-17→-20			✓			
MW5/C/11/1-4	39418-17→-20				✓		
MW6/0/11	39416-3	✓					
MW6/A/11/1-4	39498-21→-24		✓				
MW6/B/11/1-4	39417-21→-24			✓			
MW6/C/11/1-4	39418-21→-24				✓		

SAMPLE ANALYSIS REQUEST

Sampling Information

Project No. 85-01.4 Project Name: BERMITE

Sampler Name: GLEN ABDUN-NUR/TIM BRICKER Tele. No. (805)258-2241

Name of Person Receiving Samples: Mitternander

Date Samples Received: RECEIVED APR 24 1991

Internal Temperature of Sample Container: -5°C, 25°F

Notes on Samples: _____

		Analysis Required					
		VOC's 624	TOC	TOX			
Sample I.D.	Laboratory I.D.						
MW5/D/11/1A	39416-4	✓					
MW5/B/11/1A	39417-25		✓				
MW5/C/11/1A	39418-25			✓			
MW6/D/11/1A	39416-5	✓					
MW6/B/11/1A	39417-26		✓				
MW6/C/11/1A	39418-26			✓			

SAMPLE ANALYSIS REQUEST

Sampling Information

Project No. NPDES QTRLY SAMPLING Project Name: BERMITE

Sampler Name: GLEN ABDUN-NUR/TIM BRICKER Tele. No. (805) 259-2241

Name of Person Receiving Samples: M. Hernandez

RECEIVED APR 2 4 1991

Date Samples Received: _____

Internal Temperature of Sample Container: -4° C

Notes on Samples: _____

		Analysis Required					
		TDS, SUSPENDED SOLIDS, SULPHATE, CHLORIDE	SETTLEABLE SOLIDS	OIL & GREASE	PHENOLS	FISH BIOASSAY TOXICITY	
Sample I.D.	Laboratory I.D.						
MONITORING WELL 4 FILTERED	39497	✓					
"	39497		✓				
"	39497			✓			
"	39497				✓		
"	39497					✓	

APPENDIX E

Laboratory QA/QC Program

QUALITY ASSURANCE MANUAL FOR WATER
ANALYSES AND HAZARDOUS WASTE ANALYSES

Sampling

1. Samples should be representative of the source.
2. For chemical tests, the source should be run for a minimum of 15 minutes before sampling. Plastic containers may be used, except those for which glass containers should be used (See EPA Manual for preservation and holding time).
3. Fresh drawn samples are preferred.
4. For microbiological tests:
   a. We prefer to collect samples in sterile bottles provided by this laboratory.
   b. Allow the water to run for at least three (3) minutes and turn off. Burn the faucet with propane burner and turn on the water again for about one (1) minute to flush out loose crust. Carefully fill our bottle to about ½ inch from the top. Return the sample to the laboratory without delay. Samples that are not processed immediately should be stored in the refrigerator. Samples should be processed within six (6) hours from time of sampling. Under no circumstance can processing be more than thirty (30) hours after sampling. (See Standard Methods, 16th Edition, Page 859.)
5. Make available in the sample receiving area written instructions for sample preservation.

Chain of Custody

1. When sample arrives, enter in the log book, lab tag and/or work sheet the following information:
   a. Date the sample was received.
   b. Sampler's name.
   c. Description of sample.
   d. Type of analysis desired.
2. Attach the lab tag onto the container. The sample is then turned over to the analyst. The analyst will have custody of the sample until analyses are completed.
3. Chain of custody samples will be either in the immediate possession of the receiving analyst or in the appropriate locked sample storage.

Laboratory Operations

1. Deionized water
   a. Set the automatic shut-off water at a resistance of 500,000 ohms.
   b. The DI water should be checked monthly for pH and standard plate count.
   c. DI water should be tested annually for inhibitory residue suitability and heavy metals (to include lead, cadmium, chromium, copper, nickel and zinc).
2. Instruments
   a. Follow operations procedures outlined in manufacturer's handbook that comes with the instruments.

b. Have qualified specialists certify the analytical balances once a year.
c. pH meter should be standardized on the day of use with two (2) buffer solutions (pH4, 7 and/or 10).
d. Conductivity meter should be standardized once a month with 0.01 NKCL solution.
e. Turbidity meter should be standardized with standards before use. A 4.0 NTU standard made from EPA procedures should be checked once a month against commercial standard.
f. Do not use reference electrode that contains AG:AgCl for pH adjustment when silver is the analyte.
g. When using HGA, metal standards should be tested in duplicate The difference should not exceed UCL. If exceeded, repeat the analysis and investigate the cause. Corrective actions should be taken before proceeding with quantitative analysis.
h. The lab director should be notified immediately if any sign of malfunction occurs on any instrument so that he can decide if a qualified serviceman should be consulted.

3. Method of Analysis
Use methods from EPA Manual (600-4-79-020 & SW846) or standard methods. If method other than these are used, indicate in the report the reference.

Quality Control

1. Drinking water analyses:
a. Each analyst should be trained until the analyst is competent to run the test.
b. Metal analyses should be made with one or two standards along with the unknown, depending on the instructions in the procedure. If the standard deviates beyond the UCL, rerun the standard and the sample.
c. Once a year, ranges, UCL, UWL of each metal test should be calculated and recorded.
d. For trace analyses, all glasswares should be cleaned with nitric acid and rinsed with DI water.
e. Consult EPA QC Handbook, pages 9-2, 9-3, 9-4 for skills time rating of various tests.
f. For general mineral analysis, check the anion and cation balances. If the difference is morethan 0.3 mg/l or 5% which ever is greater, recheck the analysis.
g. Anytime a new batch of titrant is made, standard should be analyzed in triplicate to insure that the new titrant is suitable.
h. For auto analyses, at least three (3) standard solutions should be included for every 37 or less samples.
i. Make chemical standards for BOD5 and COD tests and check it monthly.
j. Participate in EPA and/or State sponsored referee sample programs.
k. Save EPA samples to be used for quality control purposes.
l. When metal analysis of drinking water exceeds MCL levels, repeat the analysis and/or check with alternative method when available
m. Lab Director will review all the data on inorganic chemical analyses before reporting.
2. Microbiological analyses:
a. Media stored in our refrigerator should be incubated at the appropriate temperature for 24 hours before being used and tubes showing any change should be discarded.
b. Check pH of all media after each sterilization.

c. Date all chemicals.
d. Inspect all media in the tubes before use, to make sure that there are no bubbles present. Notify clients by phone when three or more positive tubes are found. Indicate in report the name of person contacted and the date of notification.
e. Do not use mouth pipet for waste water samples. Use pipet bulb.
f. All thermometers should be standardized against a certified thermometer and record such information in the log book.
g. Temperature of incubator should be checked and recorded daily.

3. Hazardous Waste Analyses
a. A log book should be maintained for preparation of all standards, information such as suppliers, lot numbers, wt/vol. of standards used, date prepared and name of analyst should be recorded.
b. A log book sall be maintained documenting repairs and maintenance of equipment.
c. For all organic analyses, three point calibration curves should be run and documented. On each working day, standards should be run and so long as the standards are within 20% of the predicted response, samples can be run. Otherwise the three point calibration will be rerun. Sample data must be bracketed by standards
d. For organic analyses by GC, all positive results should be confirmed either by a second dissimilar column or by GC/MS.
e. These standards will be used for calibration. AA flame analysis calibration data for standards should be recorded in a laboratory notebook or work sheet.
f. Check standards should be run every 15 samples for AA analysis.
g. Organic analysis, blanks, duplicates and spike will be analyzed once for each batch of samples, or type of matrix or 20 samples, whichever is more frequent. The location of chromotogram for blanks, duplicates and spikes will be noted on sample worksheets for each batch. For inorganic metal analysis, the spikes and duplicates will be recorded in notebook or worksheet.
h. Results of analysis on blanks will be recorded on the worksheet of the batch.
i. Records of analysis of external referance samples such as those from EPA, MBS or other sources should be maintained for inspection and review.
j. Current acceptance limits on metal analysis is ±10% on duplicates and spikes. It will be ±30% on duplicates and spikes for organic analyses (Methods 8150, 8120, 8040, 8080). Standard deviation on duplicates and spikes will be developed after 20 analyses. And the acceptance limits will become ±3 standard deviations.
k. All analytical and quality control results should be reviewed and approved by a supervisor. Approval of the work will be indicated by supervisor's signature.
l. When quality control data is out of control, the analyst should:
    1) recheck calculation
    2) recalibrate the three standards
    3) if that fails, reanalyze the sample, starting from beginning.
    4) if that fails, indicate in the report the suspicion of matrix interference.
m. All analytical procedures for sample analysis should be referenced in the final report.
n. For GC/MS analyses, the overall precision and accuracy of recovery is monitored by the addition of surrogate standards to every sample.
o. For corrosivity test, a minimum of four coupons should be maintained.

HAZARDOUS WASTE TESTING LABORATORY CERTIFICATION LIST

Hazardous Materials Laboratory Section, California Department of Health Services, 2151 Berkeley Way, Berkeley, CA 94704

GL Environmental
53 Corporation Street
Santa Paula, CA 93060

PHONE: (805)525-3824

LABORATORY CATEGORY: Commercial
CERTIFICATE NUMBER: 135

ORGANIC CHEMICAL TESTING	METHOD NUMBER (DATE CERTIFIED)	(Y = CERTIFIED; N = NOT CERTIFIED)
1.1 Halogenated Volatile Organics	8010(11-08-88)	Y
1.2 Non-Halogenated Volatile Organics		N
1.3 Aromatic Volatile Organics	8020(06-06-86)	Y
1.4 Acrolein, Acrylonitrile, Acetonitrile		N
1.5 Phenols	8040(06-06-86)	Y
1.6 Phthalate Esters		N
1.7 Organochlorine Pesticides	8080(06-06-86)	Y
1.8 Polychlorinated Biphenyls (PCBs)	8080(06-06-86)	Y
1.9 Nitroaromatics and Cyclic Ketones		N
1.10 Polynuclear Aromatic Hydrocarbons		N
1.11 Chlorinated Hydrocarbons	8120(06-06-86)	Y
1.12 Organophosporus Pesticides		N
1.13 Chlorinated Herbicides	8150(06-06-86)	Y
1.14 Carbamates		N
1.15 GC/MS Method for Volatile Organics	8240(02-05-87)	Y
1.16 GC/MS Method for Semivolatile Organics	8270(05-12-87)	Y

INORGANIC CHEMICAL TESTING	METHOD NUMBER (DATE CERTIFIED)	(Y = CERTIFIED; N = NOT CERTIFIED)
2.1 Antimony	7041(06-06-86)	Y
2.2 Arsenic	7060(06-06-86)	Y
2.3 Barium	6010(06-06-86)	Y
2.4 Beryllium	6010(06-06-86)	Y
2.5 Cadmium	7130(06-06-86) 7131(06-06-86)	Y
2.6 Chromium(VI)	7196(06-06-86)	Y
2.7 Chromium(total)	7190(06-06-86)	Y
2.8 Cobalt	6010(06-06-86)	Y
2.9 Copper	7210(06-06-86)	Y
2.10 Lead	7420(06-06-86) 7421(06-06-86)	Y
2.11 Mercury	7470(06-06-86)	Y
2.12 Molybdenum	6010(06-06-86)	Y
2.13 Nickel	7520(06-06-86)	Y
2.14 Selenium	7740(06-06-86)	Y
2.15 Silver	7760(06-06-86)	Y
2.16 Thallium	7841(06-06-86)	Y
2.17 Vanadium	6010(06-06-86)	Y
2.18 Zinc	7950(06-06-86)	Y
2.19 Cyanide	9010(06-06-86)	Y
2.20 Fluoride	340.2(06-06-86)	Y
2.21 Sulfide	9030(06-06-86)	Y

OTHER		
3.0 California Waste Extraction Test	(06-06-86)	Y
4.0 Physical Property Testing	(06-06-86)	Y
5.0 Aquatic Toxicity Testing	(06-06-86)	Y
6.0 Bulk Asbestos Testing		N
7.0 Total Organic Lead	(07-13-88)	Y
8.0 Total Petroleum Hydrocarbons	(11-08-88)	Y

APPENDIX F

Laboratory QA/QC Analytical Reports and Chromatograms

4-30-91

TEST MODE

S.NO.	:	17	
EQW	:	35.45	
END.P	:	303.9	mV
SENS	:	1.0	mV
GAIN-1	:	2.26	
GAIN-2	:	4.04	
GAIN-3	:	4.04	
SMPL	:	11.10	
DLY-1	:	2.0	min
DLY-2	:	1.5	min
TEMP-1	:	850	°C
TEMP-2	:	950	°C
TEMP-3	:	25	°C
FACTOR	:	1.000	
BL	:	0.000	µg
CURRENT:		1.0	mA

TEST MODE

S.NO.	:	17	
EQW	:	35.45	
END.P	:	304.5	mV
SENS	:	1.0	mV
GAIN-1	:	1.95	
GAIN-2	:	4.00	
GAIN-3	:	7.06	
SMPL	:	11.10	
DLY-1	:	2.0	min
DLY-2	:	1.5	min
TEMP-1	:	850	°C
TEMP-2	:	950	°C
TEMP-3	:	25	°C
FACTOR	:	1.000	
BL	:	0.000	µg
CURRENT:		1.0	mA

TSX-CAL MODE
INPUT THEOR. VALUE

TSX-CAL NO.1

THEOR.	11.100	µgCl
COUNTS	10.918	µgCl
FACTOR	0.984	

TOX-BLANK MODE

TOX-BLNK NO.1

COUNTS	0.340	µgCl

TOX-BLNK NO.2

COUNTS	0.269	µgCl
AVERAGE.	0.304	µgCl

TOX-AOX NO.13 39418-1

SAMPLE	30.00	ml
COUNTS	0.330	µgCl
	0.253	µgCl
BLANK	0.304	µgCl
CONCN.	0.9	ppb

TOX-AOX NO.14 39418-2

SAMPLE	30.00	ml
COUNTS	0.300	µgCl
	0.177	µgCl
BLANK	0.304	µgCl
CONCN.	0.0	ppb

TOX-AOX NO.15 39418-3

SAMPLE	30.00	ml
COUNTS	0.358	µgCl
	0.252	µgCl
BLANK	0.304	µgCl
CONCN.	1.8	ppb

TOX-AOX NO.16 39418-4

SAMPLE	30.00	ml
COUNTS	0.282	µgCl
	0.375	µgCl
BLANK	0.304	µgCl
CONCN.	2.3	ppb

S.NO.	:	17	
EQW	:	35.45	
END.P	:	299.9	mV
SENS	:	1.0	mV
GAIN-1	:	1.35	
GAIN-2	:	3.04	
GAIN-3	:	5.34	
SMPL	:	30.00	
DLY-1	:	2.0	min
DLY-2	:	0.3	min
TEMP-1	:	850	°C
TEMP-2	:	950	°C
TEMP-3	:	25	°C
FACTOR	:	1.000	
BL	:	0.304	µg
CURRENT:		1.0	mA

TOX-AOX-2 MODE
INPUT SMPL

TOX-AOX NO.17 39418-5

SAMPLE	30.00	ml
COUNTS	2.520	µgCl
	0.231	µgCl
BLANK	0.304	µgCl
CONCN.	73.9	ppb

TOX-AOX NO.18 39418-6

SAMPLE	30.00	ml
COUNTS	2.640	µgCl
	0.283	µgCl
BLANK	0.304	µgCl
CONCN.	77.8	ppb

TOX-AOX NO.19 39418-7

SAMPLE	30.00	ml
COUNTS	2.753	µgCl
	0.279	µgCl
BLANK	0.304	µgCl
CONCN.	81.6	ppb

TOX-AOX NO.20 39418-8

SAMPLE	30.00	ml
COUNTS	2.709	µgCl
	0.344	µgCl
BLANK	0.304	µgCl
CONCN.	81.5	ppb

TOX-AOX NO.21 39418-9

SAMPLE	30.00	ml
COUNTS	0.189	µgCl
	0.142	µgCl
BLANK	0.304	µgCl
CONCN.	0.0	ppb

TOX-AOX NO.22 39418-9

SAMPLE	30.00 DR	ml
COUNTS	0.215	µgCl
	0.171	µgCl
BLANK	0.304	µgCl
CONCN.	0.0	ppb

TOX-AOX NO.7 39418-23
SAMPLE 30.00 ml
COUNTS 0.168 µgCl
0.077 µgCl
BLANK 0.299 µgCl
CONCN. 0.0 ppb

TOX-AOX NO.8 39418-24
SAMPLE 30.00 ml
COUNTS 0.220 µgCl
0.120 µgCl
BLANK 0.299 µgCl
CONCN. 0.0 ppb

TOX-AOX NO.9 39418-25
SAMPLE 30.00 ml
COUNTS 0.111 µgCl
0.116 µgCl
BLANK 0.299 µgCl
CONCN. 0.0 ppb

TOX-AOX NO.10 39418-25
SAMPLE 30.00 DUP ml
COUNTS 0.099 µgCl
0.110 µgCl
BLANK 0.299 µgCl
CONCN. 0.0 ppb

TOX-AOX NO.11 39418-26
SAMPLE 30.00 ml
COUNTS 0.391 µgCl
0.291 µgCl
BLANK 0.299 µgCl
CONCN. 3.1 ppb

TOX-AOX NO.12 Blank Spike
SAMPLE 30.00 ml
COUNTS 3.249 µgCl
0.131 µgCl
BLANK 0.299 µgCl
CONCN. 98.3 ppb

TOX-AOX NO.13 39418-26 Spike
SAMPLE 30.00 ml
COUNTS 3.441 µgCl
0.322 µgCl
BLANK 0.299 µgCl
CONCN. 105.5 ppb

TOX-AOX NO:23 BLANK SPIKE
SAMPLE 30.00 ml
COUNTS 3.313 μgCl
0.172 μgCl
BLANK 0.304 μgCl
CONCN. 100.3 ppb

TOX-AOX NO.24 39418-10
SAMPLE 30.00 ml
COUNTS 0.266 μgCl
0.208 μgCl
BLANK 0.304 μgCl
CONCN. 0.0 ppb

TOX-AOX NO.25 39418-11
SAMPLE 30.00 ml
COUNTS 0.262 μgCl
0.128 μgCl
BLANK 0.304 μgCl
CONCN. 0.0 ppb

TOX-AOX NO.26 39418-12
SAMPLE 30.00 ml
COUNTS 0.200 μgCl
0.179 μgCl
BLANK 0.304 μgCl
CONCN. 0.0 ppb

TOX-AOX NO.27 39418-13
SAMPLE 30.00 ml
COUNTS 0.229 μgCl
0.153 μgCl
BLANK 0.304 μgCl
CONCN. 0.0 ppb

TOX-AOX NO.28 39418-14
SAMPLE 30.00 ml
COUNTS 0.196 μgCl
0.145 μgCl
BLANK 0.304 μgCl
CONCN. 0.0 ppb

TOX-AOX NO.29 39418-15
SAMPLE 30.00 ml
COUNTS 0.352 μgCl
0.237 μgCl
BLANK 0.304 μgCl
CONCN. 1.6 ppb

TOX-AOX NO.30 39418-16
SAMPLE 30.00 ml
COUNTS 0.283 μgCl
0.250 μgCl
BLANK 0.304 μgCl
CONCN. 0.0 ppb

5-1-91

S.NO. : 31
EQW : 35.45
END.P : 299.6 mV
SENS : 1.0 mV
GAIN-1 : 1.48
GAIN-2 : 3.51
GAIN-3 : 5.68
SMPL : 30.00
DLY-1 : 2.0 min
DLY-2 : 0.3 min
TEMP-1 : 850 °C
TEMP-2 : 950 °C
TEMP-3 : 25 °C
FACTOR : 1.000
BL : 0.304 μg
CURRENT: 1.0 mA

S.NO. : 31
EQW : 35.45
END.P : 299.6 mV
SENS : 1.0 mV
GAIN-1 : 1.32
GAIN-2 : 3.29
GAIN-3 : 5.58
SMPL : 30.00
DLY-1 : 2.0 min
DLY-2 : 0.3 min
TEMP-1 : 850 °C
TEMP-2 : 950 °C
TEMP-3 : 25 °C
FACTOR : 1.000
BL : 0.304 μg
CURRENT: 1.0 mA

TSX-CAL MODE
INPUT THEOR. VALUE

TSX-CAL NO.1
THEOR. 11.100 μgCl
COUNTS 11.345 μgCl
FACTOR 1.022

TOX-BLANK MODE

TOX-BLNK NO.1
COUNTS 0.245 μgCl

TOX-BLNK NO.2
COUNTS 0.353 μgCl

AVERAGE 0.299 μgCl

TOX-AOX-2 MODE
INPUT SMPL

TOX-AOX NO.1 39418-17
SAMPLE 30.00 ml
COUNTS 0.304 μgCl
0.133 μgCl
BLANK 0.299 μgCl
CONCN. 0.2 ppb

TOX-AOX NO.2 39418-18
SAMPLE 30.00 ml
COUNTS 0.192 μgCl
0.122 μgCl
BLANK 0.299 μgCl
CONCN. 0.0 ppb

TOX-AOX NO.3 39418-19
SAMPLE 30.00 ml
COUNTS 0.211 μgCl
0.137 μgCl
BLANK 0.299 μgCl
CONCN. 0.0 ppb

TOX-AOX NO.4 39418-20
SAMPLE 30.00 ml
COUNTS 0.181 μgCl
0.136 μgCl
BLANK 0.299 μgCl
CONCN. 0.0 ppb

TOX-AOX NO.5 39418-21
SAMPLE 30.00 ml
COUNTS 0.142 μgCl
0.126 μgCl
BLANK 0.299 μgCl
CONCN. 0.0 ppb

TOX-AOX NO.6 39418-22
SAMPLE 30.00 ml
COUNTS 0.162 μgCl
0.190 μgCl
BLANK 0.299 μgCl
CONCN. 0.0 ppb

APPENDIX G

Laboratory Sample Analytical Reports and Chromatograms

FGL ENVIRONMENTAL

ANALYTICAL CHEMISTS

May 20, 1991
Lab. No. 39498

Bermite Division of Whittaker
22116 W. Soledad Canyon Road
Saugus, CA 91350

Gentlemen:

RE: WATER ANALYSES

Presenting results of analyses performed on your twenty-four (24) water samples received April 24, 1991. The samples have been described, as received, along with the data.

DATA

Monitoring Well Samples collected by Tim Bricker 4/23/91

	pH	EC umhos/cm
MW1/A/11/1	7.7	559
MW1/A/11/2	7.7	558
MW1/A/11/3	7.7	559
MW1/A/11/4	7.6	558
MW2/A/11/1	7.0	3920
MW2/A/11/2	7.0	3930
MW2/A/11/3	7.0	3930
MW2/A/11/4	7.0	3930
MW3/A/11/1	7.6	630
MW3/A/11/2	7.5	630
MW3/A/11/3	7.5	629
MW3/A/11/4	7.6	628
MW4/A/11/1	7.8	540
MW4/A/11/2	7.8	541
MW4/A/11/3	7.8	541
MW4/A/11/4	7.9	542
MW5/A/11/1	7.8	542
MW5/A/11/2	7.8	543
MW5/A/11/3	8.1	544
MW5/A/11/4	8.0	543
MW6/A/11/1	7.9	518

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	pH	EC umhos/cm
MW6/A/11/2	7.9	518
MW6/A/11/3	8.1	519
MW6/A/11/4	8.1	518

If there are questions, please call or write.

Very truly yours,
FGL ENVIRONMENTAL

Kurt Wilkinson, B.S.
Inorganic Laboratory Manager

Darrell H. Nelson, B.S.
Laboratory Director

KW/DHN:cem

FGL ENVIRONMENTAL

ANALYTICAL CHEMISTS

Bermite Division of Whittaker
Glen Abdun-Nur
22116 West Soledad Canyon Road
Saugus, California 91350

May 3, 1991
Lab No.: 39417
Page 1 of 3

Sampled By: Tim Bricker
Container: Glass
Preservative: Phosphoric Acid
Sample Description: See Below

Sampled: April 23, 1991
Received: April 24, 1991
Extracted: N/A
Analyzed: April 29, 1991

TOTAL ORGANIC CARBONS
EPA METHOD 415.1
REPORT OF ANALYSIS

Sample Description	Result mg/L
MW1/B/11/1	3.4
MW1/B/11/2	1.3
MW1/B/11/3	1.4
MW1/B/11/4	1.2
MW2/B/11/1	6.0
MW2/B/11/2	5.7
MW2/B/11/3	4.7
MW2/B/11/4	4.9
MW3/B/11/1	1.4
MW3/B/11/2	1.5
MW3/B/11/3	3.6
MW3/B/11/4	1.6
DLR	1

mg/L = ppm
DLR = Detection Limit Reported
MCL = Maximum Contaminant Level

Very truly yours,
FGL ENVIRONMENTAL

Steve Castellano, M.S.
Quality Assurance Director

Darrell H. Nelson, B.S.
Laboratory Director

SC/DHN:mlh

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FGL ENVIRONMENTAL

ANALYTICAL CHEMISTS

Bermite Division of Whittaker
Glen Abdun-Nur
22116 West Soledad Canyon Road
Saugus, California 91350

May 3, 1991
Lab No.: 39417

Sampled By: Tim Bricker
Container: Glass
Preservative: Phosphoric Acid
Sample Description: See Below

Sampled: April 23, 1991
Received: April 24, 1991
Extracted: N/A
Analyzed: April 29, 1991

TOTAL ORGANIC CARBONS
EPA METHOD 415.1
REPORT OF ANALYSIS

Sample Description	Result mg/L
MW4/B/11/1	3.0
MW4/B/11/2	1.3
MW4/B/11/3	1.3
MW4/B/11/4	1.2
MW5/B/11/1	1.4
MW5/B/11/2	1.6
MW5/B/11/3	1.4
MW5/B/11/4	2.0
MW6/B/11/1	1.8
MW6/B/11/2	1.5
MW6/B/11/3	1.3
MW6/B/11/4	1.3
DLR	1

mg/L = ppm
DLR = Detection Limit Reported
MCL = Maximum Contaminant Level

Very truly yours,
FGL ENVIRONMENTAL

Steve Castellano, M.S.
Quality Assurance Director

Darrell H. Nelson, B.S.
Laboratory Director

SC/DHN:mlh

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FGL ENVIRONMENTAL

ANALYTICAL CHEMISTS

Bermite Division of Whittaker
Glen Abdun-Nur
22116 West Soledad Canyon Road
Saugus, California 91350

May 3, 1991
Lab No.: 39417

Sampled By: Tim Bricker
Container: Glass
Preservative: Phosphoric Acid
Sample Description: See Below

Sampled: April 23, 1991
Received: April 24, 1991
Extracted: N/A
Analyzed: April 29, 1991

TOTAL ORGANIC CARBONS
EPA METHOD 415.1
REPORT OF ANALYSIS

Sample Description	Result mg/L
MW5/B/11/1A	1.2
MW6/B/11/1A	ND
DLR	1

mg/L = ppm
DLR = Detection Limit Reported
MCL = Maximum Contaminant Level

Very truly yours,
FGL ENVIRONMENTAL

Steve Castellano, M.S.
Quality Assurance Director

Darrell H. Nelson, B.S.
Laboratory Director

SC/DHN:mlh

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FGL ENVIRONMENTAL

ANALYTICAL CHEMISTS

Bermite Division of Whittaker
Glen Abdun-Nur
22116 West Soledad Canyon Road
Saugus, California 91350

May 3, 1991
Lab No.: 39418
Page 1 of 3

Sampled By: Tim Bricker
Container: Glass
Preservative: None
Sample Description: See Below

Sampled: April 23, 1991
Received: April 24, 1991
Extracted: N/A
Analyzed: April 30, 1991

TOTAL ORGANIC HALOGENS
EPA METHOD 9020
REPORT OF ANALYSIS

Sample Description	Result ug/L
MW1/C/11/1	ND
MW1/C/11/2	ND
MW1/C/11/3	ND
MW1/C/11/4	ND
MW2/C/11/1	74
MW2/C/11/2	78
MW2/C/11/3	82
MW2/C/11/4	82
MW3/C/11/1	ND
MW3/C/11/2	ND
MW3/C/11/3	ND
MW3/C/11/4	ND
DLR	5
MCL	500

ug/L = ppb
DLR = Detection Limit Reported
MCL = Maximum Contaminant Level

Very truly yours,
FGL ENVIRONMENTAL

Jeanine Egner, B.S.
Environmental Chemist

Darrell H. Nelson, B.S.
Laboratory Director

JE/DHN:mlh

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FGL ENVIRONMENTAL

ANALYTICAL CHEMISTS

Bermite Division of Whittaker
Glen Abdun-Nur
22116 West Soledad Canyon Road
Saugus, California 91350

May 3, 1991
Lab No.: 39418

Sampled By: Tim Bricker
Container: Glass
Preservative: None
Sample Description: See Below

Sampled: April 23, 1991
Received: April 24, 1991
Extracted: N/A
Analyzed: April 30, 1991

TOTAL ORGANIC HALOGENS
EPA METHOD 9020
REPORT OF ANALYSIS

Sample Description	Result ug/L
MW4/C/11/1	ND
MW4/C/11/2	ND
MW4/C/11/3	ND
MW4/C/11/4	ND
MW5/C/11/1	ND
MW5/C/11/2	ND
MW5/C/11/3	ND
MW5/C/11/4	ND
MW6/C/11/1	ND
MW6/C/11/2	ND
MW6/C/11/3	ND
MW6/C/11/4	ND
DLR	5
MCL	500

ug/L = ppb
DLR = Detection Limit Reported
MCL = Maximum Contaminant Level

Very truly yours,
FGL ENVIRONMENTAL

Jeanine Egner, B.S.
Environmental Chemist

Darrell H. Nelson, B.S.
Laboratory Director

JE/DHN:mlh

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FGL ENVIRONMENTAL

ANALYTICAL CHEMISTS

Bermite Division of Whittaker
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22116 West Soledad Canyon Road
Saugus, California 91350

May 3, 1991
Lab No.: 39418

Sampled By: Tim Bricker
Container: Glass
Preservative: None
Sample Description: See Below

Sampled: April 23, 1991
Received: April 24, 1991
Extracted: N/A
Analyzed: April 30, 1991

TOTAL ORGANIC HALOGENS
EPA METHOD 9020
REPORT OF ANALYSIS

Sample Description	Result ug/L
MW5/C/11/1A	ND
MW6/C/11/1A	ND
DLR	5
MCL	500

ug/L = ppb
DLR = Detection Limit Reported
MCL = Maximum Contaminant Level

Very truly yours,
FGL ENVIRONMENTAL

Jeanine Egner, B.S.
Environmental Chemist

Darrell H. Nelson, B.S.
Laboratory Director

JE/DHN:mlh

FGL ENVIRONMENTAL

ANALYTICAL CHEMISTS

Bermite Division of Whittaker
Glen Abdun-Nur
22116 West Soledad Canyon Road
Saugus, California 91350

May 6, 1991
Lab No.: 39416-1

Sampled By: Tim Bricker
Container: Glass
Preservative: None
Sample Description: MW4/0/11

Sampled: April 23, 1991
Received: April 24, 1991
Extracted: N/A
Analyzed: May 3, 1991

VOLATILE ORGANICS IN WATER (GC/MS)
EPA METHOD 624
REPORT OF ANALYSIS

Analyte	Test Results ug/L	DLR ug/L	Analyte	Test Results ug/L	DLR ug/L
Benzene	ND	0.5	1,1-Dichloroethene	ND	0.5
Bromodichloromethane	ND	0.5	trans-1,2-Dichloroethene	ND	0.5
Bromoform	ND	0.5	1,2-Dichloropropane	ND	0.5
Bromomethane	ND	0.5	cis-1,3-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5	trans-1,3-Dichloropropene	ND	0.5
Chlorobenzene	ND	0.5	Ethyl Benzene	ND	0.5
Chloroethane	ND	0.5	Methylene Chloride	ND	0.5
Chloroform	ND	0.5	1,1,2,2-Tetrachloroethane	ND	0.5
Chloromethane	ND	0.5	Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5	Toluene	ND	0.5
1,2-Dichlorobenzene	ND	0.5	1,1,1-Trichloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5	1,1,2-Trichloroethane	ND	0.5
1,4-Dichlorobenzene	ND	0.5	Trichloroethene	1.0	0.5
1,1-Dichloroethane	ND	0.5	Trichlorofluoromethane	ND	0.5
1,2-Dichloroethane	ND	0.5	Vinyl Chloride	ND	0.5
			Xylenes	ND	0.5

ug/L = Micrograms Per Liter (ppb)
ND = Not detected at or above the DLR
DLR = Detection Limit for Reporting Purposes

Very truly yours,
FGL ENVIRONMENTAL

Uday Sathe, M.S.
Environmental Chemist

Darrell H. Nelson, B.S.
Laboratory Director

US/DHN:mlh

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ANALYTICAL CHEMISTS

Bermite Division of Whittaker
Glen Abdun-Nur
22116 West Soledad Canyon Road
Saugus, California 91350

May 6, 1991
Lab No.: 39416-2

Sampled By: Tim Bricker
Container: Glass
Preservative: None
Sample Description: MW5/0/11

Sampled: April 23, 1991
Received: April 24, 1991
Extracted: N/A
Analyzed: May 3, 1991

VOLATILE ORGANICS IN WATER (GC/MS)
EPA METHOD 624
REPORT OF ANALYSIS

Analyte	Test Results ug/L	DLR ug/L	Analyte	Test Results ug/L	DLR ug/L
Benzene	ND	0.5	1,1-Dichloroethene	ND	0.5
Bromodichloromethane	ND	0.5	trans-1,2-Dichloroethene	ND	0.5
Bromoform	ND	0.5	1,2-Dichloropropane	ND	0.5
Bromomethane	ND	0.5	cis-1,3-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5	trans-1,3-Dichloropropene	ND	0.5
Chlorobenzene	ND	0.5	Ethyl Benzene	ND	0.5
Chloroethane	ND	0.5	Methylene Chloride	ND	0.5
Chloroform	ND	0.5	1,1,2,2-Tetrachloroethane	ND	0.5
Chloromethane	ND	0.5	Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5	Toluene	ND	0.5
1,2-Dichlorobenzene	ND	0.5	1,1,1-Trichloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5	1,1,2-Trichloroethane	ND	0.5
1,4-Dichlorobenzene	ND	0.5	Trichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5	Trichlorofluoromethane	ND	0.5
1,2-Dichloroethane	ND	0.5	Vinyl Chloride	ND	0.5
			Xylenes	ND	0.5

ug/L = Micrograms Per Liter (ppb)
ND = Not detected at or above the DLR
DLR = Detection Limit for Reporting Purposes

Very truly yours,
FGL ENVIRONMENTAL

Uday Sathe, M.S.
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FGL ENVIRONMENTAL

ANALYTICAL CHEMISTS

Bermite Division of Whittaker
Glen Abdun-Nur
22116 West Soledad Canyon Road
Saugus, California 91350

May 6, 1991
Lab No.: 39416-3

Sampled By: Tim Bricker
Container: Glass
Preservative: None
Sample Description: MW6/0/11

Sampled: April 23, 1991
Received: April 24, 1991
Extracted: N/A
Analyzed: May 3, 1991

VOLATILE ORGANICS IN WATER (GC/MS)
EPA METHOD 624
REPORT OF ANALYSIS

Analyte	Test Results ug/L	DLR ug/L	Analyte	Test Results ug/L	DLR ug/L
Benzene	ND	0.5	1,1-Dichloroethene	ND	0.5
Bromodichloromethane	ND	0.5	trans-1,2-Dichloroethene	ND	0.5
Bromoform	ND	0.5	1,2-Dichloropropane	ND	0.5
Bromomethane	ND	0.5	cis-1,3-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5	trans-1,3-Dichloropropene	ND	0.5
Chlorobenzene	ND	0.5	Ethyl Benzene	ND	0.5
Chloroethane	ND	0.5	Methylene Chloride	ND	0.5
Chloroform	ND	0.5	1,1,2,2-Tetrachloroethane	ND	0.5
Chloromethane	ND	0.5	Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5	Toluene	ND	0.5
1,2-Dichlorobenzene	ND	0.5	1,1,1-Trichloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5	1,1,2-Trichloroethane	ND	0.5
1,4-Dichlorobenzene	ND	0.5	Trichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5	Trichlorofluoromethane	ND	0.5
1,2-Dichloroethane	ND	0.5	Vinyl Chloride	ND	0.5
			Xylenes	ND	0.5

ug/L = Micrograms Per Liter (ppb)
ND = Not detected at or above the DLR
DLR = Detection Limit for Reporting Purposes

Very truly yours,
FGL ENVIRONMENTAL

Uday Sathe, M.S.
Environmental Chemist

Darrell H. Nelson, B.S.
Laboratory Director

US/DHN:mlh

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FGL ENVIRONMENTAL

ANALYTICAL CHEMISTS

Bermite Division of Whittaker
Glen Abdun-Nur
22116 West Soledad Canyon Road
Saugus, California 91350

May 6, 1991
Lab No.: 39416-4

Sampled By: Tim Bricker
Container: Glass
Preservative: None
Sample Description: MW5/0/11/1A

Sampled: April 23, 1991
Received: April 24, 1991
Extracted: N/A
Analyzed: May 3, 1991

VOLATILE ORGANICS IN WATER (GC/MS)
EPA METHOD 624
REPORT OF ANALYSIS

Analyte	Test Results ug/L	DLR ug/L	Analyte	Test Results ug/L	DLR ug/L
Benzene	ND	0.5	1,1-Dichloroethene	ND	0.5
Bromodichloromethane	ND	0.5	trans-1,2-Dichloroethene	ND	0.5
Bromoform	ND	0.5	1,2-Dichloropropane	ND	0.5
Bromomethane	ND	0.5	cis-1,3-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5	trans-1,3-Dichloropropene	ND	0.5
Chlorobenzene	ND	0.5	Ethyl Benzene	ND	0.5
Chloroethane	ND	0.5	Methylene Chloride	ND	0.5
Chloroform	ND	0.5	1,1,2,2-Tetrachloroethane	ND	0.5
Chloromethane	ND	0.5	Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5	Toluene	ND	0.5
1,2-Dichlorobenzene	ND	0.5	1,1,1-Trichloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5	1,1,2-Trichloroethane	ND	0.5
1,4-Dichlorobenzene	ND	0.5	Trichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5	Trichlorofluoromethane	ND	0.5
1,2-Dichloroethane	ND	0.5	Vinyl Chloride	ND	0.5
			Xylenes	ND	0.5

ug/L = Micrograms Per Liter (ppb)
ND = Not detected at or above the DLR
DLR = Detection Limit for Reporting Purposes

Very truly yours,
FGL ENVIRONMENTAL

Uday Sathe, M.S.
Environmental Chemist

Darrell H. Nelson, B.S.
Laboratory Director

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FGL ENVIRONMENTAL

ANALYTICAL CHEMISTS

Bermite Division of Whittaker
Glen Abdun-Nur
22116 West Soledad Canyon Road
Saugus, California 91350

May 6, 1991
Lab No.: 39416-5

Sampled By: Tim Bricker
Container: Glass
Preservative: None
Sample Description: MW6/0/11/1A

Sampled: April 23, 1991
Received: April 24, 1991
Extracted: N/A
Analyzed: May 3, 1991

VOLATILE ORGANICS IN WATER (GC/MS)
EPA METHOD 624
REPORT OF ANALYSIS

Analyte	Test Results ug/L	DLR ug/L	Analyte	Test Results ug/L	DLR ug/L
Benzene	ND	0.5	1,1-Dichloroethene	ND	0.5
Bromodichloromethane	ND	0.5	trans-1,2-Dichloroethene	ND	0.5
Bromoform	ND	0.5	1,2-Dichloropropane	ND	0.5
Bromomethane	ND	0.5	cis-1,3-Dichloropropene	ND	0.5
Carbon Tetrachloride	ND	0.5	trans-1,3-Dichloropropene	ND	0.5
Chlorobenzene	ND	0.5	Ethyl Benzene	ND	0.5
Chloroethane	ND	0.5	Methylene Chloride	ND	0.5
Chloroform	ND	0.5	1,1,2,2-Tetrachloroethane	ND	0.5
Chloromethane	ND	0.5	Tetrachloroethene	ND	0.5
Dibromochloromethane	ND	0.5	Toluene	ND	0.5
1,2-Dichlorobenzene	ND	0.5	1,1,1-Trichloroethane	ND	0.5
1,3-Dichlorobenzene	ND	0.5	1,1,2-Trichloroethane	ND	0.5
1,4-Dichlorobenzene	ND	0.5	Trichloroethene	ND	0.5
1,1-Dichloroethane	ND	0.5	Trichlorofluoromethane	ND	0.5
1,2-Dichloroethane	ND	0.5	Vinyl Chloride	ND	0.5
			Xylenes	ND	0.5

ug/L = Micrograms Per Liter (ppb)
ND = Not detected at or above the DLR
DLR = Detection Limit for Reporting Purposes

Very truly yours,
FGL ENVIRONMENTAL

Uday Sathe, M.S.
Environmental Chemist

Darrell H. Nelson, B.S.
Laboratory Director

US/DHN:mlh

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FGL ENVIRONMENTAL

ANALYTICAL CHEMISTS

May 20, 1991
Lab. No. 39500

Bermite Division of Whittaker
22116 W. Soledad Canyon Road
Saugus, CA 91350

Gentlemen:

RE: WATER ANALYSES

Presenting results of analyses performed on your three (3) water samples received April 24, 1991. The samples have been described, as received, along with the data.

DATA

Monitoring Well Samples collected by Tim Bricker 4/23/91

	MW1/K/11	MW2/K/11	MW3/K/11	Date of Analysis
Antimony, ug/L	<100	<100	<100	4/29/91
Arsenic, ug/L	<50	<50	<50	4/29/91
Barium, ug/L	<100	600	<100	4/29/91
Cadmium, ug/L	<10	<10	<10	4/29/91
Chromium, ug/L	<50	<50	<50	4/29/91
Copper, ug/L	<100	<100	<100	4/30/91
Lead, ug/L	<50	<50	<50	4/29/91
Mercury, ug/L	<1	<1	<1	4/29/91
Selenium, ug/L	<10	<10	<10	4/29/91
Thallium, ug/L	<100	<100	<100	4/29/91

If there are questions, please call or write.

Very truly yours,
FGL ENVIRONMENTAL

Kurt Wilkinson, B.S.
Inorganic Laboratory Manager

Darrell H. Nelson, B.S.
Laboratory Director

KW/DHN:cem

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FGL ENVIRONMENTAL

ANALYTICAL CHEMISTS

May 20, 1991
Lab. No. 39499

Bermite Division of Whittaker
22116 W. Soledad Canyon Road
Saugus, CA 91350

Gentlemen:

RE: WATER ANALYSES

Presenting results of analyses performed on your three (3) water samples received April 24, 1991. The samples have been described, as received, along with the data.

DATA

Monitoring Well Samples collected by Tim Bricker 4/23/91

	MW1/I/11	MW2/I/11	MW3/I/11
Total Phosphate, mg/L	<0.1	<0.1	<0.1

If there are questions, please call or write.

Very truly yours,
FGL ENVIRONMENTAL

Kurt Wilkinson, B.S.
Inorganic Laboratory Manager

Darrell H. Nelson, B.S.
Laboratory Director

KW/DHN:cem

REPLICATE STATISTICS FOR ELEVENTH QUARTER
RCRA GROUNDWATER SAMPLING AND ANALYSIS
Bermite Division, Whittaker Corporation

Well	Date	pH	Hydrogen Ion Conc	Conductance (umhos/cm)	TOC (mg/l)	TOX (ug/l)
Detection Limit					1	5
MW-4	04/23/91	7.8	1.58E-08	540	3.0	2.5
MW-4	04/23/91	7.8	1.58E-08	541	1.3	2.5
MW-4	04/23/91	7.8	1.58E-08	541	1.3	2.5
MW-4	04/23/91	7.9	1.26E-08	542	1.2	2.5
Population Size		4	4	4	4	4
Mean		7.825	1.50E-08	541.000	1.700	2.500
Standard Deviation		0.050	1.63E-09	0.816	0.868	0.000
Variance		0.003	2.66E-18	0.667	0.753	0.000
Coeff. Variance		0.639	1.08E+01	0.151	51.056	0.000
MW-5	04/23/91	7.8	1.58E-08	542	1.4	2.5
MW-5	04/23/91	7.8	1.58E-08	543	1.6	2.5
MW-5	04/23/91	8.1	7.94E-09	544	1.4	2.5
MW-5	04/23/91	8.0	1.00E-08	543	2.0	2.5
Population Size		4	4	4	4	4
Mean		7.925	1.24E-08	543.000	1.600	2.500
Standard Deviation		0.150	4.06E-09	0.816	0.283	0.000
Variance		0.022	1.65E-17	0.667	0.080	0.000
Coeff. Variance		1.893	3.27E+01	0.150	17.678	0.000
MW-6	04/23/91	7.9	1.26E-08	518	1.8	2.5
MW-6	04/23/91	7.9	1.26E-08	518	1.5	2.5
MW-6	04/23/91	8.1	7.94E-09	519	1.3	2.5
MW-6	04/23/91	8.1	7.94E-09	518	1.3	2.5
Population Size		4	4	4	4	4
Mean		8.000	1.03E-08	518.250	1.475	2.500
Standard Deviation		0.115	2.68E-09	0.500	0.236	0.000
Variance		0.013	7.20E-18	0.250	0.056	0.000
Coeff. Variance		1.443	2.61E+01	0.096	16.020	0.000

Note: All results reported as non-detected have been given a value equal to one-half the detection limit for purposes of statistical calculations, as recommended on page 122 of the RCRA Ground-Water Monitoring Technical Enforcement Guidance Document, September 1986.

SUMMARY OF QUARTERLY REPLICATE STATISTICS FOR
TOTAL ORGANIC CARBON (TOC)
Bermite Division, Whittaker Corporation

Well	Quarter	Number of Replicates	Mean	Standard Deviation	Variance	Coeff. of Variance
MW-4	1	4	1.5	0.000	0.000	0.000
	2	4	1.5	0.000	0.000	0.000
	3	4	2.1	1.083	1.172	50.943
	4	4	3.8	2.658	7.063	70.868
	5	4	1.5	0.000	0.000	0.000
	6	4	6.8	1.639	2.688	24.287
	7	4	2.0	0.000	0.000	0.000
	8	4	2.0	0.000	0.000	0.000
	9	4	0.5	0.000	0.000	0.000
	10	4	2.1	0.294	0.087	14.019
	11	4	1.7	0.868	0.753	51.056
MW-5	5	4	1.5	0.000	0.000	0.000
	6	4	6.9	3.130	9.797	45.527
	7	4	2.0	0.000	0.000	0.000
	8	4	2.0	0.000	0.000	0.000
	9	4	0.5	0.000	0.000	0.000
	10	4	2.3	0.206	0.043	9.062
	11	4	1.6	0.283	0.080	17.678
MW-6	5	4	1.5	0.000	0.000	0.000
	6	4	1.5	0.000	0.000	0.000
	7	4	2.0	0.000	0.000	0.000
	8	4	2.0	0.000	0.000	0.000
	9	4	0.5	0.000	0.000	0.000
	10	4	2.1	0.245	0.060	11.664
	11	4	1.5	0.236	0.056	16.020

TABLE H-2, PAGE 4

SUMMARY OF QUARTERLY REPLICATE STATISTICS FOR
TOTAL ORGANIC CARBON (TOC)
Bermite Division, Whittaker Corporation

MW-6, Quarter 11	
Number of Samples (nm)	4
Sample Mean (Xm)	1.475
Sample Variance (Sm2)	0.056
T-Statistic (tm) (Part 264, App. IV)	2.353
T-Statistic (tb) (Part 264, App. IV)	1.721
Special Weighting (Wm)	0.014
Special Weighting (Wb)	0.071
T-Statistic (t*)	-1.484
Comparison T-Statistic (tc)	1.825

NOTES:

The statistics in this table are defined in 40 CFR Part 264, App. IV--Cochran's Approximation to the Behrens-Fisher Students' T-Test.

All values less than the detection limits have been given values equal to one-half the detection limits for purposes of calulation, as recommended on page 122 of the RCRA Ground-Water Monitoring Technical Enforcement Guidance Document, September 1986.

TABLE H-3

SUMMARY OF QUARTERLY REPLICATE STATISTICS FOR
TOTAL ORGANIC HALOGENS (TOX)
Bermite Division, Whittaker Corporation

Well	Quarter	Number of Replicates	Mean	Standard Deviation	Variance	Coeff. of Variance
MW-1	1	4	50	0.000	0.000	0.000
	2	4	50	0.000	0.000	0.000
	3	4	50	0.000	0.000	0.000
	4	4	50	0.000	0.000	0.000
	5	4	50	0.000	0.000	0.000
	6	4	50	0.000	0.000	0.000
	7	4	10	0.000	0.000	0.000
	8	4	10	0.000	0.000	0.000
	9	4	75	50.000	2500.000	66.667
	10	4	3	0.000	0.000	0.000
	11	4	3	0.000	0.000	0.000
MW-2	1	4	222	197.540	39022.220	89.116
	2	4	120	7.071	50.000	5.893
	3	4	118	10.308	106.250	88.773
	4	4	111	11.388	129.688	10.236
	5	4	50	0.000	0.000	0.000
	6	4	50	0.000	0.000	0.000
	7	4	71	1.920	3.688	2.695
	8	4	60	3.367	11.333	5.611
	9	4	50	0.000	0.000	0.000
	10	4	74	8.737	76.333	11.687
	11	4	79	3.830	14.667	4.848
MW-3	1	4	258	209.359	43831.250	81.305
	2	4	50	0.000	0.000	0.000
	3	4	50	0.000	0.000	0.000
	4	4	50	0.000	0.000	0.000
	5	4	50	0.000	0.000	0.000
	6	4	50	0.000	0.000	0.000
	7	4	10	0.000	0.000	0.000
	8	4	10	0.000	0.000	0.000
	9	4	50	0.000	0.000	0.000
	10	4	3	0.000	0.000	0.000
	11	4	3	0.000	0.000	0.000

TABLE H-3, PAGE 2

SUMMARY OF QUARTERLY REPLICATE STATISTICS FOR
TOTAL ORGANIC HALOGENS (TOX)
Bermite Division, Whittaker Corporation

Well	Quarter	Number of Replicates	Mean	Standard Deviation	Variance	Coeff. of Variance
MW-4	1	4	85	36.856	1358.333	43.359
	2	4	50	0.000	0.000	0.000
	3	4	3630	565.420	319700.000	15.576
	4	4	858	99.844	9968.750	11.644
	5	4	128	20.463	418.750	16.050
	6	4	99	28.508	812.688	28.723
	7	4	10	0.000	0.000	0.000
	8	4	10	0.000	0.000	0.000
	9	4	50	0.000	0.000	0.000
	10	4	3	0.000	0.000	0.000
	11	4	3	0.000	0.000	0.000
MW-5	5	4	50	0.000	0.000	0.000
	6	4	50	0.000	0.000	0.000
	7	4	10	0.000	0.000	0.000
	8	4	10	0.000	0.000	0.000
	9	4	50	0.000	0.000	0.000
	10	4	3	0.000	0.000	0.000
	11	4	3	0.000	0.000	0.000
MW-6	5	4	50	0.000	0.000	0.000
	6	4	50	0.000	0.000	0.000
	7	4	10	0.000	0.000	0.000
	8	4	10	0.000	0.000	0.000
	9	4	50	0.000	0.000	0.000
	10	4	3	0.000	0.000	0.000
	11	4	3	0.000	0.000	0.000

TABLE H-3, PAGE 3

SUMMARY OF QUARTERLY REPLICATE STATISTICS FOR
TOTAL ORGANIC HALOGENS (TOX)
Bermite Division, Whittaker Corporation

Background Wells 1 and 3	
Number of Background Samples (nb)	22
Background Mean	44.682
Background Variance (Sb2)	2794.846
MW-4, Quarter 11	
Number of Samples (nm)	4
Sample Mean (Xm)	2.500
Sample Variance (Sm2)	0.000
T-Statistic (tm) (Part 264, App. IV)	2.353
T-Statistic (tb) (Part 264, App. IV)	1.721
Special Weighting (Wm)	0.000
Special Weighting (Wb)	127.038
T-Statistic (t*)	-3.742
Comparison T-Statistic (tc)	1.721
MW-5, Quarter 11	
Number of Samples (nm)	4
Sample Mean (Xm)	2.500
Sample Variance (Sm2)	0.000
T-Statistic (tm) (Part 264, App. IV)	2.353
T-Statistic (tb) (Part 264, App. IV)	1.721
Special Weighting (Wm)	0.000
Special Weighting (Wb)	127.038
T-Statistic (t*)	-3.742
Comparison T-Statistic (tc)	1.721

TABLE H-3, PAGE 4

SUMMARY OF QUARTERLY REPLICATE STATISTICS FOR
TOTAL ORGANIC HALOGENS (TOX)
Bermite Division, Whittaker Corporation

MW-6, Quarter 11	
Number of Samples (nm)	4
Sample Mean (Xm)	2.500
Sample Variance (Sm2)	0.000
T-Statistic (tm) (Part 264, App. IV)	2.353
T-Statistic (tb) (Part 264, App. IV)	1.721
Special Weighting (Wm)	0.000
Special Weighting (Wb)	127.038
T-Statistic (t*)	-3.742
Comparison T-Statistic (tc)	1.721

NOTES:

The statistics in this table are defined in 40 CFR Part 264, App. IV--Cochran's Approximation to the Behrens-Fisher Students' T-Test.

All values less than the detection limits have been given values equal to one-half the detection limits for purposes of calulation, as recommended on page 122 of the RCRA Ground-Water Monitoring Technical Enforcement Guidance Document, September 1986.

TABLE H-4

SUMMARY OF QUARTERLY REPLICATE STATISTICS FOR
SPECIFIC CONDUCTANCE
Bermite Division, Whittaker Corporation

Well	Quarter	Number of Replicates	Mean	Standard Deviation	Variance	Coeff. of Variance
MW-1	1	4	598	13.519	182.750	2.263
	2	4	572	9.731	94.688	1.702
	3	4				
	4	4	500	3.031	9.188	0.606
	5	4	524	10.986	120.688	2.096
	6	4	570	6.180	38.188	1.084
	7	4	504	2.500	6.250	0.497
	8	4	530	35.218	1240.333	6.651
	9	4	544	0.000	0.000	0.000
	10	4	573	11.121	123.667	1.942
	11	4	559	0.577	0.333	0.103
MW-2	1	4	3717	80.624	6500.250	2.169
	2	4	3886	19.486	379.688	0.501
	3	4				
	4	4	4285	22.517	507.000	0.525
	5	4	4005	46.098	2125.000	1.151
	6	4	4016	62.185	3867.000	1.548
	7	4	3675	14.257	203.250	0.388
	8	4	3577	20.000	400.000	0.559
	9	4	3882	0.000	0.000	0.000
	10	4	3993	5.000	25.000	0.125
	11	4	3928	0.500	25.000	0.127
MW-3	1	4	699	19.447	378.188	2.783
	2	4	664	23.467	550.668	3.535
	3	4				
	4	4	661	0.000	0.000	0.000
	5	4	617	1.785	3.188	0.289
	6	4	641	4.493	20.188	0.701
	7	4	590	3.742	14.000	0.634
	8	4	589	17.000	289.000	2.889
	9	4	642	0.000	0.000	0.000
	10	4	656	2.500	6.250	0.381
	11	4	629	0.957	0.917	0.152

TABLE H-4, PAGE 2

SUMMARY OF QUARTERLY REPLICATE STATISTICS FOR
SPECIFIC CONDUCTANCE
Bermite Division, Whittaker Corporation

Well	Quarter	Number of Replicates	Mean	Standard Deviation	Variance	Coeff. of Variance
MW-4	1	4	606	19.397	376.250	3.203
	2	4	520	4.950	24.500	0.952
	3	4				
	4	4	596	1.732	3.000	0.291
	5	4	571	6.837	46.750	1.198
	6	4	577	5.629	31.688	0.975
	7	4	526	5.745	33.000	1.092
	8	4	515	0.000	0.000	0.000
	9	4	544	0.000	0.000	0.000
	10	4	571	8.386	70.333	1.470
	11	4	541	0.816	0.667	0.151
MW-5	5	4	543	1.299	1.688	0.239
	6	4	578	5.890	34.688	1.019
	7	4	512	3.345	11.188	0.654
	8	4	560	12.961	168.000	2.315
	9	4	544	0.000	0.000	0.000
	10	4	552	4.787	22.917	0.868
	11	4	543	0.816	0.667	0.150
MW-6	5	4	528	6.418	41.188	1.216
	6	4	578	4.330	18.750	0.750
	7	4	503	4.603	21.188	0.915
	8	4	536	1.500	2.250	0.280
	9	4	541	0.000	0.000	0.000
	10	4	528	10.720	114.917	2.029
	11	4	518	0.500	0.250	0.096

TABLE H-4, PAGE 3

SUMMARY OF QUARTERLY REPLICATE STATISTICS FOR
SPECIFIC CONDUCTANCE
Bermite Division, Whittaker Corporation

Background Wells 1 and 3	
Number of Background Samples (nb)	20
Background Mean	593.025
Background Variance (Sb2)	3257.664
MW-4, Quarter 11	
Number of Samples (nm)	4
Sample Mean (Xm)	541.000
Sample Variance (Sm2)	0.667
T-Statistic (tm) (Part 264, App. IV)	2.353
T-Statistic (tb) (Part 264, App. IV)	1.729
Special Weighting (Wm)	0.167
Special Weighting (Wb)	162.883
T-Statistic (t*)	-4.074
Comparison T-Statistic (tc)	1.730
MW-5, Quarter 11	
Number of Samples (nm)	4
Sample Mean (Xm)	543.000
Sample Variance (Sm2)	0.667
T-Statistic (tm) (Part 264, App. IV)	2.353
T-Statistic (tb) (Part 264, App. IV)	1.729
Special Weighting (Wm)	0.167
Special Weighting (Wb)	162.883
T-Statistic (t*)	-3.918
Comparison T-Statistic (tc)	1.730

TABLE H-4, PAGE 4

SUMMARY OF QUARTERLY REPLICATE STATISTICS FOR
SPECIFIC CONDUCTANCE
Bermite Division, Whittaker Corporation

MW-6, Quarter 11	
Number of Samples (nm)	4
Sample Mean (Xm)	518.250
Sample Variance (Sm2)	0.250
T-Statistic (tm) (Part 264, App. IV)	2.353
T-Statistic (tb) (Part 264, App. IV)	1.729
Special Weighting (Wm)	0.063
Special Weighting (Wb)	162.883
T-Statistic (t*)	-5.858
Comparison T-Statistic (tc)	1.729

NOTES:

The statistics in this table are defined in 40 CFR Part 264, App. IV--Cochran's Approximation to the Behrens-Fisher Students' T-Test.

All values less than the detection limits have been given values equal to one-half the detection limits for purposes of caluiation, as recommended on page 122 of the RCRA Ground-Water Monitoring Technical Enforcement Guidance Document, September 1986.

TABLE H-5

SUMMARY OF QUARTERLY REPLICATE STATISTICS FOR
HYDROGEN ION CONCENTRATION ((10)^-pH)
Bermite Division, Whittaker Corporation

Well	Quarter	Number of Replicates	Mean	Standard Deviation	Variance	Coeff. of Variance
MW-1	1	4	3.16E-08	0.00E+00	0.00E+00	0.0
	2	4	3.37E-08	3.55E-09	1.26E-17	10.5
	3	4	6.31E-08	0.00E+00	0.00E+00	0.0
	4	4	3.37E-08	3.55E-09	1.26E-17	10.5
	5	4	2.51E-08	0.00E+00	0.00E+00	0.0
	6	4	3.98E-08	0.00E+00	0.00E+00	0.0
	7	4	2.84E-08	3.25E-09	1.06E-17	11.5
	8	4	5.34E-09	6.50E-10	4.23E-19	12.2
	9	4	4.09E-08	1.07E-08	1.14E-16	26.1
	10	4	3.16E-08	0.00E+00	0.00E+00	0.0
	11	4	2.12E-08	2.58E-09	6.67E-18	12.2
MW-2	1	4	1.44E-07	2.53E-08	6.41E-16	17.6
	2	4	1.00E-07	0.00E+00	0.00E+00	0.0
	3	4	2.00E-07	0.00E+00	0.00E+00	0.0
	4	4	1.52E-07	3.03E-08	9.16E-16	19.9
	5	4	1.19E-07	1.12E-08	1.26E-16	9.4
	6	4	2.12E-07	2.24E-08	5.00E-16	10.5
	7	4	2.38E-07	2.24E-08	5.00E-16	9.4
	8	4	1.92E-08	4.42E-09	1.95E-17	23.0
	9	4	1.50E-07	1.63E-08	2.66E-16	10.8
	10	4	2.00E-07	6.41E-17	4.11E-33	0.0
	11	4	1.00E-07	0.00E+00	0.00E+00	0.0
MW-3	1	4	3.37E-08	3.55E-09	1.26E-16	10.5
	2	4	1.97E-08	5.57E-09	3.10E-17	28.3
	3	4	5.01E-08	0.00E+00	0.00E+00	0.0
	4	4	3.16E-08	0.00E+00	0.00E+00	0.0
	5	4	3.00E-08	2.82E-09	7.93E-18	9.4
	6	4	6.72E-08	7.07E-09	5.00E-17	10.5
	7	4	4.75E-08	4.46E-09	1.99E-17	9.4
	8	4	6.07E-09	1.39E-09	1.93E-18	22.9
	9	4	2.38E-08	2.58E-09	6.67E-18	10.8
	10	4	5.43E-08	6.49E-09	4.21E-17	12.2
	11	4	2.84E-08	3.76E-09	1.41E-17	13.2

TABLE H-5, PAGE 2

SUMMARY OF QUARTERLY REPLICATE STATISTICS FOR
HYDROGEN ION CONCENTRATION ((10)^-pH)
Bermite Division, Whittaker Corporation

Well	Quarter	Number of Replicates	Mean	Standard Deviation	Variance	Coeff. of Variance
MW-4	1	4	2.12E-08	2.24E-09	5.00E-18	10.5
	2	4	2.84E-08	3.25E-09	1.06E-17	11.5
	3	4	3.57E-08	4.09E-09	1.68E-17	11.5
	4	4	1.69E-08	1.78E-09	3.16E-18	10.5
	5	4	2.38E-08	2.24E-09	5.00E-18	9.4
	6	4	2.51E-08	0.00E+00	0.00E+00	0.0
	7	4	2.38E-08	2.24E-09	5.00E-18	9.4
	8	4	4.24E-09	5.15E-10	2.65E-19	12.2
	9	4	3.00E-08	3.25E-09	1.06E-17	10.8
	10	4	2.51E-08	0.00E+00	0.00E+00	0.0
	11	4	1.50E-08	1.63E-09	2.66E-18	10.8
MW-5	5	4	2.38E-08	2.24E-09	5.00E-18	9.4
	6	4	3.16E-08	0.00E+00	0.00E+00	0.0
	7	4	2.51E-08	0.00E+00	0.00E+00	0.0
	8	4	1.00E-08	2.83E-18	8.02E-36	0.0
	9	4	2.02E-08	3.80E-09	1.44E-17	18.8
	10	4	2.51E-08	0.00E+00	0.00E+00	0.0
	11	4	1.24E-08	4.06E-09	1.65E-17	32.7
MW-6	5	4	2.00E-08	0.00E+00	0.00E+00	0.0
	6	4	2.15E-08	3.89E-09	1.51E-17	18.1
	7	4	2.38E-08	2.24E-09	5.00E-18	9.4
	8	4	1.20E-08	1.30E-09	1.69E-18	0.0
	9	4	1.89E-08	2.05E-09	4.21E-18	10.8
	10	4	2.51E-08	0.00E+00	0.00E+00	0.0
	11	4	1.03E-08	2.68E-09	7.2E-18	26.1

TABLE H-5, PAGE 3

SUMMARY OF QUARTERLY REPLICATE STATISTICS FOR
HYDROGEN ION CONCENTRATION
Bermite Division, Whittaker Corporation

Background Wells 1 and 3	
Number of Background Samples (nb)	22
Background Mean	3.39E-08
Background Variance (Sb2)	2.44E-16
MW-4, Quarter 11	
Number of Samples (nm)	4
Sample Mean (Xm)	1.50E-08
Sample Variance (Sm2)	2.66E-18
T-Statistic (tm) (Part 264, App. IV)	3.182
T-Statistic (tb) (Part 264, App. IV)	2.080
Special Weighting (Wm)	0.000
Special Weighting (Wb)	0.000
T-Statistic (t*)	-5.521
Comparison T-Statistic (tc)	2.142
MW-5, Quarter 11	
Number of Samples (nm)	4
Sample Mean (Xm)	1.24E-08
Sample Variance (Sm2)	1.65E-17
T-Statistic (tm) (Part 264, App. IV)	3.182
T-Statistic (tb) (Part 264, App. IV)	2.080
Special Weighting (Wm)	0.000
Special Weighting (Wb)	0.000
T-Statistic (t*)	-5.520
Comparison T-Statistic (tc)	2.378

TABLE H-5, PAGE 4

SUMMARY OF QUARTERLY REPLICATE STATISTICS FOR
HYDROGEN ION CONCENTRATION
Bermite Division, Whittaker Corporation

MW-6, Quarter 11	
Number of Samples (nm)	4
Sample Mean (Xm)	1.03E-08
Sample Variance (Sm2)	7.20E-18
T-Statistic (tm) (Part 264, App. IV)	3.182
T-Statistic (tb) (Part 264, App. IV)	2.080
Special Weighting (Wm)	0.000
Special Weighting (Wb)	0.000
T-Statistic (t*)	-6.581
Comparison T-Statistic (tc)	2.234

NOTES:

The statistics in this table are defined in 40 CFR Part 264, App. IV--Cochran's Approximation to the Behrens-Fisher Students' T-Test.

All values less than the detection limits have been given values equal to one-half the detection limits for purposes of calulation, as recommended on page 122 of the RCRA Ground-Water Monitoring Technical Enforcement Guidance Document, September 1986.

EXAMPLE STATISTICAL CALCULATIONS:

1. The following are calculations of the mean, standard deviation, variance, and coefficient of variance for Quarter 8 TOX values from MW-4:

Raw data for Quarter 8:

Replicate 1	<20 ug/L
Replicate 2	<20 ug/L
Replicate 3	<20 ug/L
Replicate 4	<20 ug/L

a. Population Size (n) = 4

b. Mean $\overline{X}_i = \sum_{i=1}^{n} X/n$

Ex.
10
10
10
+10
40

$40 \div 4 = \underline{10}$

c. Standard Deviation = $(S) = \sqrt{\frac{\sum (X_i - \overline{X})^2}{n - 1}}$

n = sample population size

X_i = the i^{th} item

$\overline{X}$ = average of values

Ex. $S = \sqrt{\frac{(10-10)^2 + (10-10)^2 + (10-10)^2 + (10-10)^2}{4 - 1}}$

$S = \sqrt{\frac{0 + 0 + 0 + 0}{4 - 1}}$

$S = \sqrt{\frac{0}{4 - 1}}$

$S = \sqrt{0}$

$S = \underline{0}$

d. Variance $(S^2) = (0)^2 = \underline{0}$

e. Coefficient of Variance (CV) $= (S/\overline{X}_i) \times 100 = (0/10) \times 100 = \underline{0}$

The above values are shown in Table H-1, "Replicate Statistics for Eighth Quarter RCRA Groundwater Sampling and Analysis". These values were then transferred to Table H-3, "Summary of Quarterly Replicate Statistics for Total Organic Halogens (TOX)". In order to perform the t-test, the above values calculated for MW-4 (Quarter 8) must be compared with background values calculated for upgradient wells (MW-1 and MW-3).

2. The following are calculations of the mean, standard deviation and variance of the mean for TOX values calculated for MW-1 and MW-3 (quarters 1 through 8):

Monitoring Well	Quarter	Mean
MW-1	1	50
	2	50
	3	50
	4	50
	5	50
	6	50
	7	10
	8	10
MW-3	1	257.5
	2	50
	3	50
	4	50
	5	50
	6	50
	7	10
	8	10

a. Number of background samples (n_b) = 16

b. Background mean = $\bar{X}_b = \sum_{i=1}^{n_b} X_i/n_b$

X_b = [6 (50) + 2 (10) + 257.5 + 5 (50) + 2 (10)]/16

$\bar{X}_b$ = 53.0

c. Background standard deviation (S_b) = $\sqrt{\frac{\Sigma(X_i - \bar{X}_b)^2}{n_b - 1}}$

$$S_b = \sqrt{\frac{(50 - 53.0)^2 + (50 - 53.0)^2 + \ldots + (10 - 53.0)^2}{14 - 1}}$$

$$S_b = \sqrt{\frac{49{,}315.2}{13}} = \sqrt{3{,}793.5}$$

S_b = 61.59

d. Background variance (S_b^2) = $(S_b)^2$

$S_b^2 = (61.59)^2$

S_b^2 = 3,793.5

3. The following are calculations of the student t statistics:

T - statistic (t^*) = $(X_m - X_b) / \sqrt{(S_m^2/n_m) + (S_b^2/n_b)}$

$t^* = (10 - 53.0)/ \sqrt{(0/10) + (3.301 \times 10^3/16)}$

$t^* = -2.994$

Comparison T - statistic (t_c) =

$[(S_m^2/n_m)\, t_m + (S_b^2/n_b)\, t_b] / [S_m^2/n_m) + (S_b^2/n_b)]$

$t_c = [0/4)\ 2.353 + (3.301 \times 10^3/16)\ 1.753] / [0/4 + (3.301 \times 10^3/16)]$

$t_c = 1.753$

$t^* < t_c$, therefore, there was not a statistically significant difference between background and monitoring well MW-4 TOX concentrations in ground water during the eighth quarter.